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OF THE NEW YORK ACADEMY OF MEDICINE

Original Articles

by

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CONTENTS

Thoughts on Medical History and Libraries—
1847 and 1947 65
Sanford V. Larkey

Advances in Our Knowledge Concerning the Etiology
and Treatment of Hematological Disorders . . . 84
Cyrus C. Sturgis

A Critique of the Present Status of the Psychotherapies 100
Robert P. Knight

Safeguards in the Use of New Drugs 115
Austin Smith

Medicine Under Hitler 125
George Rosen

Library Notes:

Recent Accessions to the Library 130

AUTHORS ALONE ARE RESPONSIBLE FOR OPINIONS EXPRESSED IN THEIR CONTRIBUTIONS

MAHLON ASHFORD, *Editor*

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BULLETIN OF
THE NEW YORK ACADEMY
OF MEDICINE

FEBRUARY 1949

THOUGHTS ON MEDICAL HISTORY AND LIBRARIES—1847 AND 1947*

SANFORD V. LARKEY

Librarian, William H. Welch Medical Library, John Hopkins University and Lecturer in the History of Medicine, School of Medicine.

THE FOUNDING of The New York Academy of Medicine in 1847 was a great event of a momentous year and now in another momentous year we are meeting to celebrate the 100th anniversary of that founding. Centennial celebrations give us a fine opportunity to look back to the past, to make comparisons and to evaluate our present position and plans for the future in light of this agreeably enforced historical viewpoint. The program of this entire celebration with the Institutes covering so many aspects of medicine, so many interests of the Academy, is admirably designed for this end.

It is a great honor and a pleasure to me to have been asked to take part in this program and I propose to take up some of the problems confronting medical history and medical libraries in the spirit of the program of this celebration.

In 1847 we had just seen the victorious end of another war and the

* Read at the Centennial Celebration of The New York Academy of Medicine, meeting of the Section of Historical and Cultural Medicine and of the Friends of the Rare Book Room, March 12, 1947.

beginning of a new era of great expansion for this country. One of the remarkable developments of this period was the great increase in learned societies. It is significant that in 1847, in addition to the Academy of Medicine, the American Medical Association was founded and plans were being made for the American Association for the Advancement of Science, to hold its first meeting in 1848. Many reasons have been given for this movement to found societies. Material factors were certainly of great importance. Although the frontier was expanding rapidly, communications and transportation were at the same time shortening distances, making it easier to arrange meetings. In addition to this factor, Bates[1] has pointed out another—"Americans were becoming a nation of 'joiners'." Societies were being founded for every conceivable purpose or cause. And we still seem to be doing it.

One does not have to conjecture, though, about the reasons for the founding of the Academy. These were expressed very clearly in the early meetings. The primary reason was the growing concern over the state of medical practice and medical education. The aims of the Academy along these lines and the results of its endeavors will be made clear in the various Institutes of this celebration program. But there was another aim that is closer to this group tonight. As Dr. Samuel S. Purple, one of the founders, said at the semi-centennial meeting in 1897,[2] "But there was still another [object], which was early entertained by the founders, but which did not take on formal development until 1876, and this was the establishment of a great medical library, free to all, one that would fully meet the present and future wants of the medical profession of this great city." One only has to look at this great library with its wonderful Rare Book Room to see how well this aim of the founders of the Academy has been fulfilled.

In going back to the first days of the Academy I immediately wondered if the impact of the earlier Mexican war led to the same mental outlook that we are experiencing today, whether there was the same introspection, the same mingled hopes and fears for the future. It was therefore with great curiosity that I turned to Dr. John W. Francis' *Anniversary Discourse* of 1847.[3] Dr. Francis was, as you know, one of the founders and second President of the Academy. While he took a strong stand against the charlatans and the irregular systems of medicine of his day, his main theme was enthusiasm for the achievements of medical research of the preceding fifty years and unbounded

optimism for the future. As he expressed it, "Onward is the watchword, progress is the spirit of the age." A student of medical history, he uses the method of historical comparison to show the great advances of medicine in his time and to answer those who said that medicine was behind the age. Incidentally it is interesting to note that among the American contributions he does not mention the discovery of anesthesia although already the British *Lancet* had hailed it as one of our great contributions along with the discovery of electricity by Franklin. As an historian he also gives us a very valuable series of biographies of New York physicians from the early Dutch days to his own. Throughout one realizes that Dr. Francis feels that he is living in a great transitional era and that great days are just ahead, days in which the newly founded Academy would play a leading role. But of the Mexican war there is only brief passing mention and no indication of what he thought its results would be.

Now here again in 1947, after another war—a far more terrible and devastating war—we find ourselves thinking of what the future holds. As in 1847 great things are expected of science but we are not quite as confident as were the founders of the Academy. Underneath the optimism there is a feeling of uncertainty not only about the political future but about science itself. Along with the hopes for a better life from scientific advances, particularly in the field of medicine, there is also the fear that science may be our undoing. This fear relates not only to the material dangers of atomic energy but also to something deeper, to an effect on our thought and on education.

Today there is a great emphasis on the utilitarian aspects of science and with this a quite generally accepted view that science has and should replace the humanities in our educational program. This trend to replace the humanities by science is bitterly opposed by many thinkers who see in it the danger of a break in the continuity of our cultural background which they feel would lead to intellectual chaos. They believe that a liberal education based on the humanities is essential for real thinking and that too great a stress on science and particularly on its practical side will result in mediocrity, even in the sciences themselves.

Starting from the two extreme points of view there would seem to be little basis for a common agreement, but I feel that here is an issue that must be faced by us, since any solution will greatly affect the

study and teaching of the history of medicine and the future of medical libraries. I propose, therefore, in my discussion first to examine the historical background of this split into two opposing points of view. Then I would like to discuss the place of the history of medicine against this background, its relation to humanistic studies and also its useful role. I will conclude by extending this theme to a consideration of the place of the medical library in our modern world.

The primary feature of the Renaissance was the revolt against the authority of the ancients as it had been systematized in medieval scholasticism. This revolt was the beginning of modern science and was essential for progress. One must, however, examine the corollary that this revolt implied a denunciation of all ancient learning and that hence the study of it was unprofitable.

There were many great 16th century scientists who did not so denounce all ancient learning. While on one hand we have those like the iconoclast Paracelsus who violently opposed all the past, there were many others who appreciated the value of ancient learning and who, although renouncing the false theories and errors of the past, applied its philosophical and experimental methods to achieve their great discoveries.

It should be pointed out that Aristotle and Galen did not establish their own authority. While there is a certain amount of dogma in their works, the rigid authority was given to their ideas by their followers. As Sir Farquhar Buzzard, the late Regius Professor of Medicine at Oxford, once said to me when we were discussing this problem, "It seems to me that Galen has been blamed for a thousand years of progress that *didn't* take place." The key for the disclosure of Galen's errors and the consequent overthrow of his theories already existed in his own works, in his anatomical and physiological methods.

It should also be pointed out in this connection that the earlier phase of the Renaissance, the so-called Humanistic Renaissance, the rediscovery of the original Greek texts of the classics following the fall of Constantinople, was a vital stimulus to the later scientific developments. It was the interest in these more accurate texts that led to a more critical evaluation. Editions in the original Greek were printed and new translations into Latin made, such as those of Galen by Thomas Linacre. In these, new meanings were found which opened up new vistas for further speculation. And also grave errors were un-

covered, again provoking further research and new discoveries. Thus Vesalius, astounded by the errors he had found in the works of Galen, went on to produce his own great original work. It should be remembered though that his approach, his order of presentation and many of his methods were those of Galen.

William Harvey, whose discovery was up to then the most revolutionary in medicine, is at the same time one of the best examples of those who bridged the past and the new. Never a blind follower of Aristotle he still leaned heavily on him, particularly for his basic philosophy and for his methods. He realized that Aristotle and Galen could not have investigated everything and so he sees no discredit to them in pointing out their errors. But nowhere is there denunciation of them or the idea that there should be a break with the past. His discovery, though, was to have this very effect on his followers.

As we go into the 17th century we find more extreme positions being taken. Other factors, political and religious, are assuming a greater importance in the dispute and affect the rationality of the scientific issue. In order to give the coup de grâce to authority the proponents of the new science attack all ancient learning stressing the mistakes and passing by the fundamental truths still valid. On the other hand the more conservative group made an equally extreme and violent defense of the ancients. In so far as this is a struggle for scientific freedom the modern scientist naturally sympathizes with those in revolt but at the same time the other factors should be remembered. One may question whether the fanatical one-sided attack really serves the best interest of science. Perhaps the more temperate attitude, such as is shown in some of the 16th century English mathematicians is more effective.

I would like to say a few words about two of these men as an illustration of this viewpoint, Robert Recorde and Thomas Digges. For some reason these two seem closer to me than some of the men of the later centuries. Possibly this is because I have made more of a study of them but I think it is rather that their ideas are more like our own.

Robert Recorde, a physician, was primarily a great teacher of mathematics. One of the earliest followers of Copernicus in England and a leader of the anti-Aristotelian movement he nevertheless gave due credit to the achievements of the classical scientists. His remark on Ptolemy very succinctly expresses the whole of his philosophy: "No

man can worthely praise Ptolemye, his travell being so great, his diligence so exacte in observations, and conference with all nations, and all ages, and his reasonable examination of all opinions, with demonstrable confirmation of his owne assertion, yet muste you and all take heed, that both in him and in al mennes workes, you be not abused by their authoritye, but evermore attend to their reasons, and examine them well, ever regarding more what is saide, and how it is proved, then who saieth it."[4]

Thomas Digges was a greater scientist. A confirmed Copernican he naturally was opposed to the Aristotelian and Ptolemaic theory of the universe. In 1576 he translated part of Copernicus into English, and in this work he added a concept that was even more shattering to the world of Aristotle—the idea of the infinity of the universe. Yet he too has words of praise for the modesty of Aristotle, blaming his disciples for having more rigid views than their master. Digges in himself represented the two sides of a scientist, the speculative thinker and the practical man. Besides being a great mathematician and astronomer he was also an engineer and an expert in gunnery. But evidently even in his day it was felt that one man could not be both things. He tells an amusing story about this when he tried to bring about a reform in navigation: "First therefore, by demonstrations mathematical finding the great imperfections in the art of Navigation and gross errors practised by masters and mariners of this our age, I sought by reason to persuade with some of them to alter and reform their charts, instruments, and erroneous rules, showing them infallible demonstrations of their errors, . . . I have been answered that my demonstrations were pretty devices, but if I had been in sea services, I should find all these my inventions mere toys, and their rules only infallible. These constant asseverations from men of that profession, even in their own art, did make me half distrust my demonstrations and to think that Reason had abused me, or that there were some such Mystery in sea service, as no Landman's reason might attain to."[5]

But he was not to be put off so easily and decided to meet the 'practical man' on his own ground. "To resolve myself of this Paradox, I spent a 15 weeks in continual sea services upon the ocean, where by proof I found, and those masters themselves could not but confess, that Experience did no less plainly discover the errors of their rules than my demonstrations."

These two men were typical of the Elizabethan Age. Always on the search for new horizons they still showed that universality that could combine the speculative and the practical. They did not throw off the past simply because it was old but could use it and build on it.

Let us now turn again to 1847, to see what was the attitude then and whether we can find some help in solving our questions to-day. The *Anniversary Discourse* of Dr. Francis reveals a man deeply grounded in the learning of the past, one who relates it to the problems and the future of a scientific age. To him experimental science was the great force of the age but while extolling it, as one of the primary aims of the Academy, he emphasized its historical development from the past. Thus he says of 'philosophical medicine' "it is only a restoration of the Hippocratic art, corroborated by the great discoveries of modern experiment."[6] In another place he says, "This, too, is an age of investigation and the rationale of causes is ever sought . . . Theories born in the twilight of past ages are submitted to a more searching alchemy in the crucible of the present. New truth is evolved; old truth confirmed . . ."[7]

He appreciated the influence of other factors in our civilization. He pointed out the "identity of medical knowledge with the progress of society." In a series of historical parallels he shows that medicine flourished most in times of intellectual advance as in the Greece of Pericles, the Augustan age of Rome, under the enlightened Caliphs of Bagdad and similarly in modern European countries in the greatest periods of "advancement in classical and philosophical learning." But medicine had made its own contribution to these advances not only intellectually but above all in its practical application for human well-being. Of this he says: "There is something inexpressibly great in this mutual relation between the cravings of man in his progressive movement, and the support he derives at every stage from the art of healing."[8]

He was keenly aware of the effect of political systems on scientific thought. He pointed out that the great ideas of the 16th and 17th centuries had not achieved their complete development because of existent political systems. As he expressed it: "Despotism opposed an iron barrier to any true relation between the great heart of the people and liberal culture."[9] To him the great hope for the future was the United States "the very home of free inquiry." He is proud of its past accomplishments and is eloquent in his prophecy of days to come. As a loyal New Yorker he now turns from the country as a whole to

his own city and state. In this transition he exhibits one of the few light touches of his whole speech. Thus he says: "Without considering the motives of the puritan settlers, a theme well nigh exhausted by New-England eloquence, or the chivalric spirit of the southern cavaliers, so nobly embodied in Sir Walter Raleigh, let us turn to those who came from our own fatherland, the scarcely-appreciated home of Erasmus and Grotius."[10] Then follows the series of biographies previously mentioned.

He illustrates the relation of medicine and literature by telling of the friendships between great physicians of the past and the literary lights of their times. He summarizes as follows: "That the healing art is intimately allied with all sciences and the amenities of letters, its history sufficiently demonstrates; and this, indeed, is no small argument for its intrinsic dignity."[11]

A vigorous proponent of the utmost freedom in scientific research and enthusiastic about the future results of the experimental method, he yet makes a plea for a balanced point of view, that we might take to heart today. Thus he says: "In entering on this march of improvement, so congenial to a sound medical mind, impressed with its responsibilities, an enlightened inquirer of this character will cherish a becoming deference for the wisdom which his predecessors have supplied him, and look with proper caution whither his steps are tending: innovation has its apprehensions, and the utility of reform ought to be urgent. Lord Bacon says it is well to be aware, that it is the reformation that draweth on the change, and not the desire of change that pretendeth the reformation."[12]

When we come to look today at our basic problem, that of the position of science and its relation to the humanities, we find that the situation is not as simple as in the past. On one hand there is not the broad point of view as seen in Recorde and Digges in the 16th century or in Dr. Francis in 1847. Nor is there as clear-cut a drawing of the issue as we saw in the extreme and often fanatical views of the 17th and 18th centuries. Today we do not know just where we do stand. Science is certainly playing a greater and greater role in our life and thought, but all too often it is the practical side that is emphasized. The more speculative side, the true basis of further advance, does not get as much attention nor is it appreciated that there is a fundamental dependency of all science on a broader background of thought.

As science takes this prominent place in our thought there are many who feel we are losing something, something that may be vital. There are different degrees of reaction to this situation. Some feel that it is a natural step in the progress of the human mind, and that the departure of the humanities is of no account. Others, although lamenting the passing of the classics, feel that it is probably inevitable. At the same time they are looking for something else, something resembling the humanities to take their place. They appreciate the importance of the humanistic point of view and feel that in some way this spirit must be kept alive although they do not seem to be willing to keep the real essence, humanism itself, alive. It has been suggested that the history of science should replace the humanities in our curriculum in order to preserve the spirit of humanism. Since, as you will see presently, I believe that the history of science, and as a part of it, the history of medicine, is an integral part of humanistic thought, I cannot accept this solution. You cannot replace the whole by a part. You cannot cut the roots of a tree and expect it to grow.

On the other side of the argument are those who feel that our whole educational program must be based on humanism, in its broadest sense, if we are to turn out really educated, well-rounded people, people who can think and who will have the intellectual capacity for the difficult problems of the future. This view has been admirably expressed in the recent books and articles by Sir Richard Livingstone. While not depreciating the importance of the practical side of science in our professional education, it is his view that the heritage of Western civilization is the guiding factor in our culture. As he says: "Our civilization, spiritual and intellectual, was born in Greece; Rome applied Greek thought to the life and institutions of a great empire; Christianity added new forces which modified and developed its Graeco-Roman inheritance. . . . However ignorant we may be of them, they will mold us. However we may react from them, we bear their marks."[13] He feels that the student must understand thoroughly the ideas and methods of thinking of the great thinkers of the past in order to understand his own times.

It is significant that his own humanism is broad enough to include scientific thought. He says, "in reading history as the record of human progress, education must see all three strands in the rope—spiritual, intellectual, political—study the men in whom they are embodied and do justice to all."[14] Thus in the sixteenth century one should study "Sir

Thomas More and Copernicus as well as Henry VIII and Luther."

As to the situation in this country he cites Walter Lippman's address to the American Association for the Advancement of Science in 1940. In this Mr. Lippman pointed out that we were in an educational vacuum —that there was no common aim or common culture. He feels that the reason that we are so ready to discard the heritage of the past is that we are not willing to make the effort to grapple with it, that we are afraid to face the discipline required to understand it. One must admit that there is a great deal of truth in what he says.

It is not my place here to speak further of the part that either the humanities or science should have in our whole educational program, but I think we are aware that there are disquieting signs in our educational system. There is certainly a dangerous situation in primary and secondary education. The recent series of articles in the *New York Times*,[15] by Dr. Benjamin Fine, gave a graphic picture of the state to which this basic part of our educational system had fallen. He dealt primarily with the physical factors, the lack of buildings and teaching facilities and the incredibly poor salaries paid to teachers. Important as these are, I feel that there are deeper causes for alarm, that there is something wrong with the whole fiber, that, as Mr. Lippman says, there *is* no aim. I am afraid that we will see the effects of this on science itself and even on the history of medicine.

I will now take up my second point—the position of the history of medicine against this background and what I think should be its role, from the humanistic point of view and from the practical point of view.

The history of medicine and its broader counterpart, the history of science, have always had to look two ways. The history of science is part of science and part of history. Due to the nature of its subject matter it has developed almost independently of the general study of history. Most of those who have in the past written of the history of science have been scientists and it is only fairly recently that general historians have taken up its study. Because of the way in which the history of science has developed, with the emphasis primarily on the purely scientific role, there has been a great tendency to look at the past in light of the present, that is, to look at science as something apart and to study its progress along the lines of its own growth, against the criterion of current validity.

Most histories of science tell of the *great* discoveries—how some

thinker has reached a conclusion far beyond the views held by his fellows. The principal emphasis is placed on the logic of the discovery, and particularly its relation to the views we hold today. A theory that is now discarded, but which in its time may have been current for centuries and exercised a tremendous influence, never has the attention that is given to a view in line with our own.

While it is important to know the history of the great discoveries, this is hardly history in the real sense of the word. It certainly is not history, as the historian knows it, since it leaves out the background of the man of science. It tells us nothing of the way in which the thought of the day or the impact of current affairs influence the scientist. But the scientist is as much a part of his time as the poet or the statesman, and the things he accomplishes are generally related to the conditions and problems of his own day.

Such an approach is not to be deprecated. It is important in studying the development of any science and it stimulates wider interest in the subject. However, it has tended to put science in a place apart and has thus helped in a way to create our present dilemma.

Dr. Owsei Temkin in his thoughtful and provocative *Essay on the Usefulness of Medical History for Medicine*[16] has discussed in some detail the approaches to the history of medicine, telling of the biographical and bibliographical approach, the pragmatic history, the history of diseases and finally the relation to other realms of thought.

The other approach to the history of science, that of looking at the past in light of its own intellectual and social milieu, is coming more to the fore. In this, scientific thought is studied as part of the development of the history of ideas and in its relationship to the interplay of other forces at any given period. One thus could paraphrase the statement of Sir Richard Livingstone in reverse and say that in the 16th century one must remember Sir Thomas More, Henry VIII and Luther as well as Copernicus and Vesalius.

I believe that this humanistic approach to the history of medicine will be followed more and more in the future and that we will see a closer relation to the historical and social sciences. With the ever-widening horizon of modern medicine I feel that greater coördination between the history of medicine and political, social and economic history is increasingly necessary in order that we may understand all the forces influencing the social aspects of our profession.

The meetings that are to take place here at the Academy in the next few weeks illustrate the importance given to this part of medicine. I feel that the history of medicine has a definite function to fulfill, in giving the necessary background and as a focus for bringing together all the elements necessary for a sound solution of our problems.

The history of medicine if it is to be looked at in this way is obviously not something that can be picked up in passing. It will require real study. For it, there must be the broad background of humanistic study, just as I believe there should be for those who expect to achieve real advance in science. The history of science and the history of medicine cannot be expected to supply the untrained student all of humanism as a predigested pabulum. There can be no history of science, no history of medicine without a knowledge of the humanities. The content of thought of the classical literatures and its continuation and amplification as it passed on down the ages is not something that stands apart and that can be thrown away at will. It is a basic element of our life. The great contributions of logical thinking and of philosophical systems are an inherent part of what we think today, in all realms of our culture, in science as well as in literature, history and philosophy. The admission that something *like* the humanities is needed is really an argument for the humanities.

Dr. Henry Sigerist has well expressed this general viewpoint in his recent book of essays, "*The University at the Crossroads.*" He believes "that tomorrow, more than ever, we shall have to emphasize the study of the classics."[17] In another place he says, "If the purpose of the undergraduate school is to give young people a broad general education and to help them understand the world in which they live and in which they are called upon to play a part, the course must include both the humanities and the sciences."[18]

I would like now to say something of the more practical aspects of the history of medicine. For we hope to find in the historian of medicine of the future something of the spirit we saw in Thomas Digges, a man who understands the past in its broadest relations and who is capable of speculative thought but who at the same time is aware of the problems of modern medical research. For the history of medicine should be something living and should be able to contribute to scientific research.

The usefulness of history has recently found strong support from a somewhat unexpected quarter. Last Saturday, in what *The New York*

Times[19] called "an unprecedented move," the Navy Department called upon educators and historians to help write the naval history of World War II. Both Admiral Nimitz and Admiral King stressed the practical value of history. Admiral Nimitz said "it would be more helpful to our country if more time were spent in trying to predict the future, adding that he "did not mean the 'crystal-ball' method, but the historical one."

I would like to say that the army too has an extensive historical program under way and in this medicine will play a large part. For the past three years I have been working on the medical history of the war and in addition to our aim of wanting to tell a good story of what happened we have always had in mind the practical aspect of our work. As a matter of fact we feel that these two aims are closely related. The more ably the story is told from the truly historical standpoint, the more valuable it will be as a guide to the future. For this reason we have spent a good deal of time in planning the presentation of the history, developing outlines which would give the continuity of events.

It must be realized that this is a different kind of medical history not only because it is current history and so entails a different kind of documentary study but also because it is a military history as well. The basic principles of historiography, however, still apply. There are many facets to such a history. In the first place there is the need to record the actual clinical practices that were used and to evaluate the results and to tell of what discoveries were made and how they can be further applied. These may not be considered as history at all but rather as scientific monographs. They are, however, included in the scope of the historical project. And it is true that the bringing together of the many isolated facts and the attempt to present them in an orderly way involves the historical method. Because of the importance of these clinical results in their practical application it has been decided to separate these studies from the more historical account and every effort is being made to publish them at an early date.

The other part of the story entails a much more thorough application of historical methods. There are so many factors involved in the operation of a great medical service, caring for millions of sick and wounded in all parts of the world and under all sorts of unusual conditions, that great care must be taken to make sure that we are really telling the whole story. Thus, in the history of the European Theatre

we are trying to tell the story of a medical service that supported the greatest military operation in history. This story must be related to the actual military operations for they were always influencing what was happening or was to happen medically. The medical story has to go along with this military story. First there is the long period of building up for the assault across the channel. During this time preparations and plans were being made for the great network of hospitals that was to dot the English country side. These hospitals had to be staffed, supplied and the staff trained for the tasks ahead. All of these elements have to be brought together in the story, they cannot be told separately. Then came the planning for the assault itself and for the campaigns on the continent. This demands a very carefully integrated account if it is to be understood by the average reader. With the actual assault and the campaigns the task becomes even more confusing. There are so many elements all acting at the same time but the aim has to be to relate them all and to tell a continuous story. Such a story brings out many practical aspects and for this reason alone should be useful. I feel that in addition there may be the possibility of applying some of the lessons learned in evolving the presentation of this story to the study of some of the more intricate problems of medicine in our complex life today. The documentary sources of medical history are increasing. In addition to purely scientific works, sources of social, economic and political origin will more and more be utilized.

Medical history can and should play a positive part in scientific medical research. With so many lines of attack and with so many allied fields of science being involved there is great need for some common point of view, some place where a broader outlook can be gained which can serve as a starting point for new approaches. The history of medicine can give this by bringing to research the logical and philosophical ideas underlying the problems in hand. I would like to give an example or two of what this could mean. The study on viruses presents many difficult logical and philosophical implications. The problem is complicated because it brings up at the same time some of the most puzzling concepts of biology, chemistry and physics, each of which has a history and an ideological content of its own. In discussing the basic question, the living or non-living nature of viruses, one immediately thinks of two similar questions of the past, which strangely enough did not seem to be very much connected when they were being fought over then.

These are the problems of spontaneous generation and the struggle between the vitalists and the mechanists. As we look at it now in light of some of the present views on viruses the mechanists probably *should* have believed in spontaneous generation. But here again we must realize that other factors were at work. I think an important step in trying to solve this aspect of the virus problem would be to go back and re-examine the thought on these two basic problems and then to see how these ideas apply to the question today. I do not say that this will solve the problem but it will at least clear the air.

Another concept that has always interested me is that of teleology, the idea of final cause or of purpose in life processes. So often do we hear young physiologists express themselves teleologically, sometimes deliberately as a way of short-cut but many times I am sure without realizing that there is such a thing as teleology. Here again the historical background would give more understanding and at least a clearer expression of ideas. In these and in many other instances the methods of medical history can be applied. These methods have their greatest role in the education of the medical student but I feel that the medical historian can also do his part in an active way in medical research itself.

Dr. Welch, in his essay, "The Interdependence of Medicine with other Sciences of Nature,"[20] has pointed out how much the other sciences owe to research in medicine. From the illustrations he gives one can appreciate how important is some knowledge of the history of medicine to workers in other scientific fields. This indicates another useful role for medical history in the future. But at the same time one realizes from Dr. Welch's paper the equal importance of the history of other sciences for the history of medicine. Such study is important not only for the proper understanding of medical history but also in connection with the application of the history of medicine to scientific research. Each of the sciences is becoming so complex that it is difficult for a worker in one field to grasp all the implications in another. The study of the historical development of ideas in these other fields and the relation of them to the medical problem will help in overcoming the difficulty and will lead to greater unification of the sciences.

Now for my third point I would like to say something of the role of the medical library in our modern world. We have already seen what great importance the founders of the Academy of Medicine gave to the library in their plans of 1847 for the future. We all know what

a vital part the Library here has played in the life of the Academy and of the whole country, and will continue to play. I want to emphasize at this time what a great debt the other libraries of the country owe to Dr. Archibald Malloch. I know you all appreciate him here and can see every day how he applies his many remarkable gifts to the complex problems of a great library, but you are not the only ones who benefit. Fortunately, we all can share in his wide learning and his sound sense of values.

During the past two days at the Institute on methods and problems of scientific libraries, so admirably organized by Dr. Malloch, Miss Doe and the staff of your library, we have had many stimulating discussions on the problems facing libraries. These meetings have indicated how seriously librarians are settling to the work ahead. They realize the difficulties but are resolved to face the challenge. Above all, the meeting emphasized the significance of the Library to medical research. I feel that all medical libraries will take an increasingly more important place in the future.

As before in my talk I wish to repeat the same theme, that of the broad cultural significance of a library and its practical contributions. A library is the great repository of the learning of the past. I hope I have said enough to let you know that I think *this* has value. In the great rare book collections, of which the Rare Book Room here is one of the finest in the country the scholar can have direct access to the great classics of medicine and science. Dr. Malloch told us yesterday of the ways used to make the Rare Book Room a more living thing. By extra-catalogues, that is by listing books by printers, by illustrators, by country and chronologically the great treasures take on new significance. Here in these old books the reader can see the thought of great minds unfolding and if he has the insight to look a little further he can see that this is part of a continuous process and that it is related to other elements of our cultural heritage. He may not have to look beyond the book he is reading to see this. If he has before him the 1543 edition of Vesalius he can see the loving care that Oporinus gave to the printing of this magnificent volume. He can learn a lot about the history of printing, how books were printed in the past, how they were put together and bound and what kind of paper was used. He will note the selection of capital letters to fit the subject matter, often with an almost Rabelaisan slant. And above all he will see the remarkable drawings of

Calcar, so perfectly in the tradition of Renaissance art, and the equally remarkable technique of the wood-cut reproduction of the drawings. He should know that most of these very wood-blocks have survived (or did until this last war) and that The New York Academy of Medicine joined with the University of Munich in printing an edition from them in 1934.

If he studies the incunabula he will see how type-faces developed from the script of various schools of producers of manuscripts. He will see how Aldus and the great French printers improved type-faces and will realize what this has meant to modern printing. In short the book is the epitome of the age itself. But for the full appreciation of these books the reader must have some background. These treasures will be wasted if there is no one who can read them and understand them. So again we see the need for a liberal education.

On the practical side I feel that there is a great field for the future in bibliographical research. With the tremendous growth of medical literature in recent years and the extension of medicine into so many overlapping fields there is an ever-increasing danger that we will become lost in the flood of writings. Billings pointed out this danger many years ago but the problem is infinitely worse now. It has reached a state where almost half of the scientific articles published are not indexed or abstracted at all. There should be a thorough study of our index and abstract journals with the aim of division of fields so that there will be as complete a coverage as possible.

Above all though, bibliographical research should be related more directly to actual medical research. Bibliographers should work intimately with the scientific researcher, having an understanding of the problem under investigation but at the same time having the mastery of the bibliographical tools. I realize this is an ambitious program and that it will require a special type of training but I think it will prove economical in the long run.

In our present large-scale plans for scientific research not enough attention has been given to this aspect of research. The bibliographical needs have not been appreciated and little provision has been made in these programs to meet the increased demands that the programs themselves will bring about.

I firmly believe that when the Army Medical Library becomes the truly National Medical Library and finally is housed in a new building

that it so badly needs and must have, that it will have a greater role in bibliographical research. It is embarking on many new projects and these in turn will affect other libraries.

Another program that should be mentioned is that of UNESCO. Plans are being made on an international scale for greater coöperation between the libraries of the world in order to make the scientific and cultural advances of all countries more available to others.

It can be seen that all these programs for the future will call for a much larger number of trained people. It is my belief that we should have some type of training that will give a basic knowledge of the subject of science and of medicine along with the professional skill in library practices and techniques. Only with such a training will the medical librarian of the future be able to cope to the fullest with the problems of the future. It will be objected that this training will take too long. I think this illustrates one of our present fallacies in saving time at the wrong place. Along with what I have said before I think we have to look at our secondary education and relate its aims more clearly to our final end.

This brings me back again to our main theme. In all phases of education we have seen the need for the humanistic approach and I think this applies equally in general education, in medical education, in the study of the history of medicine and in the training of a well-rounded medical librarian. It is necessary if we want to have people of real education but I feel that it will also result in more effective practical ends.

In my talk I have tried to point out what I thought were some of the problems we face today, particularly as they relate to the history of medicine and to medical libraries. I feel that the library and all that it means will continue to be equally as important as the laboratory in the future of culture and of science. I do not think that librarians can fully subscribe to the advice of Louis Agassiz to "read nature not books." If we did we might soon be out of a job. Let us rather take those grand lines of Milton, from the Areopagitica, which Dr. Welch so aptly chose to be writ large on the walls of the building bearing his name:

> *"For books are not absolutely dead things, but do contain a potency of life in them to be as active as that soul was whose progeny they are; nay, they do preserve as in a vial the purest efficacy and extraction of that living intellect that bred them."*

REFERENCES

1. Bates, Ralph S. *Scientific Societies in the United States.* New York, John Wiley & Sons, 1945, pp. 37-38.
2. Purple, Samuel S. *Trans. N. Y. Acad. Med.* 1896-1901, *Semi Centennial Celebration,* 1903, p. 13.
3. Francis, John W. *Anniversary Discourse Before The New York Academy of Medicine,* New York, Henry Ludwig, 1847.
4. Johnson, Francis R. and Larkey, Sanford V. Robert Recorde's Mathematical Teaching and the Anti-Aristotelian Movement, *Huntington Library Bulletin,* No. 7, April 1935, p. 75.
5. Digges, Thomas. *An Arithmeticall Militare Treatise named Stratioticos,* London, H. Bynneman, 1579. Quoted by the present author in an as yet unpublished article, *The Role of Scientists in the Elizabethan Government.* For Digges ideas on the infinity of the universe *cf.* Johnson, Francis R. and Larkey, Sanford V. Thomas Digges, the Copernican System, and the Idea of the Infinity of the Universe in 1576, *Huntington Library Bulletin,* No. 5, April 1934, pp. 69-117 and Johnson, Francis R. *Astronomical Thought in Renaissance England.* Baltimore, Johns Hopkins Press, 1937.
6. *Op. cit.* Francis, p. 38.
7. *Idem,* p. 8.
8. *Idem,* p. 45.
9. *Idem,* p. 50.
10. *Idem,* p. 52-53.
11. *Idem,* p. 108.
12. *Idem,* p. 39.
13. Livingstone, Sir Richard. *On Education,* Cambridge, University Press, New York, Macmillan Co., 1945. "Education for a World Adrift," p. 94.
14. *Idem,* p. 63.
15. Fine, Benjamin. *New York Times,* Series of Twelve Articles, Feb. 10-Feb. 21, 1947.
16. Temkin, Owsei. An Essay on the Usefulness of Medical History for Medicine, *Bull. History of Medicine,* 1946, 19:9-47.
17. Sigerist, Henry E. *The University at the Crossroads,* New York, Henry Schuman, 1946, p. 77.
18. *Idem,* p. 151.
19. *New York Times,* News Section, Sunday, March 9, 1947, p. 28.
20. Welch, William H. The Interdependence of Medicine with other Sciences of Nature, *Science,* 1908, 27:49-64; also reprinted in *Papers and Addresses by William Henry Welch,* Baltimore, Johns Hopkins Press, 1920, Vol. III, pp. 315-333 and published separately by the Welch Bibliophilic Society, Baltimore, 1934.

ADVANCES IN OUR KNOWLEDGE CONCERNING THE ETIOLOGY AND TREATMENT OF HEMATOLOGICAL DISORDERS*

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THE most frequently encountered hematological disorder of clinical significance is anemia. Such a state may be defined as a reduction in the hemoglobin, the red blood cell count, or both, below the accepted normal standards. If 15.6 grams of hemoglobin per 100 cc. of blood is considered to be 100 per cent, the lower limit of normal for adult males is 13.3 grams (85 per cent), and 12 grams (77 per cent) for women. The lowest limit of normal for the red blood cell count in males is 4.7 million per cubic millimeter, and for females it is 4.13 per cubic millimeter. Two other levels of the hemoglobin are important to keep in mind. One is 11 grams (70 per cent) which is approximately the level at which the symptoms of anemia (weakness, ease of fatigue, palpitation, dyspnea, and pallor) commonly become apparent; the other is 10 grams (64 per cent) which is the lower limit of normal for the physiological anemia of pregnancy or that which is normally due to increased blood volume with maximum dilution. A hemoglobin level as low as 64 per cent is considered to be normal in a pregnant woman during the latter half of pregnancy.[1]

In about 25,000 routine admissions of patients over 14 years of age to the in-patient and out-patient departments of the University Hospital, an anemia of clinical significance, as defined above, was observed in one of every eight patients (12 per cent).[2] Of these, the most frequently observed (41 per cent) was a normocytic, normochromic type, usually due to chronic infection, and less commonly to chronic nephritis. Next in frequency (39 per cent) was a microcytic, hypochromic anemia due to iron deficiency which is most frequently associated with chronic hemorrhage. The remaining group (20 per cent)

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included, for the most part, patients with myelophthisic anemia in association with the various conditions as leukemia, Hodgkin's disease, and different types of cancer; the macrocytic anemias such as pernicious anemia, refractory anemias, and the hemolytic anemias.

Anemia Due to Chronic Infection: This form of anemia is of the normocytic, normochromic type and is usually mild, with a hemoglobin level most frequently in the vicinity of 9.5 grams (60 per cent) and a red blood cell count of 3.0 million per cubic millimeter. The blood picture appears to be surprisingly normal when studied in a stained blood film. Such an anemia is most commonly associated with a chronic infection which causes an obscure disturbance in the metabolism of hemoglobin, thereby retarding its normal rate of synthesis. The infections most frequently responsible are those involving the urinary tract, the female pelvis, and chronic pulmonary infections such as lung abscess and bronchiectasis, osteomyelitis, rheumatoid arthritis, brucellosis, and some patients with Streptococcus viridans infection. Rarely has focal infection been of significance. Occasionally, in a growing child, a chronic active sinus involvement may be of importance, but quiescent foci about the teeth or elsewhere play no role in the production of such an anemia.

Another common cause of such an anemia is chronic renal insufficiency. This is usually due to nephritis, associated with an increased nonprotein nitrogen in the circulating blood, but it may be the result of any other cause of renal insufficiency, such as congenital polycystic kidneys.

Improvement in this variety of anemia will not occur with any form of medication unless the underlying cause, whether it be infection or renal disease, is eliminated. Such therapeutic agents as iron, liver, desiccated stomach, folic acid, or any combinations of these medications are valueless. The proper form of therapy is to employ penicillin, streptomycin, or the sulfonamide drugs, either alone, or in combination with surgical measures to control the infection when present. The only other form of treatment which is indicated, when the anemia is severe and the condition of the patient warrants it, is the use of blood transfusions. When the latter form of therapy is decided upon, it is my custom to give a sufficient number to increase the hemoglobin percentage to normal limits. As a rough measure of the number necessary, one may calculate that 500 cc. of blood will increase the hemoglobin

level about 10 per cent. The anemia of nephritis is benefited only by blood transfusions and in my opinion a sufficient number should be given to bring the blood to normal. Usually the patient derives considerable improvement from such therapy.

Iron Deficiency Anemia: This type of anemia is of greatest importance because it occurs commonly, and also because immediate and gratifying results usually follow the oral administration of iron. The diagnosis of such a condition ordinarily presents no difficulties. If a patient has an anemia with a color index in the vicinity of 0.5, a mean corpuscular hemoglobin concentration of 30 per cent or less, and the erythrocytes have an average volume between 55 and 70 microns, it is almost certain that the anemia is due to a deficiency of iron, and that a satisfactory response will be produced by proper iron therapy. Two other anemias may have a blood picture which is similar. They are Mediterranean anemia and a hereditary, possibly sex-linked microcytic hypochromic anemia as reported by Rundles and Falls.[3] Both are completely refractory to iron and are so rare in this country that they need not be discussed fully in this communication.

The causes of an iron deficiency anemia may be summarized as follows: 1) Increase in the iron requirement due to growth in infancy, adolesence, and pregnancy and during lactation; 2) Diminished iron reserves in infancy, due to premature birth or iron deficiency anemia in the mother; 3) A dietary intake deficient in iron, observed especially in infancy when the diet may be composed solely of milk; 4) The adverse effect of a subacidity or achlorhydria which lessens the normal rate of absorption of iron; 5) Infection which tends to prevent the synthesis of iron to form hemoglobin; 6) The loss of iron due to chronic hemorrhage especially from the uterus and the gastro-intestinal tract. One of the most common causes of an iron-deficiency anemia in females is excessive menstrual flow, the extent of which is not recognized by the patient. The patient may state, for example, that the periods are "normal" when as much as three or four times the usual menstrual flow may occur at each period for years.

Treatment of Iron Deficiency Anemia: The success of the treatment depends on the following: 1) An iron deficiency must be present; 2) An adequate dose of iron must be given. This may be in the form of ferrous sulfate 0.3 gram (5 grains) three times a day, before meals, orally, which may be doubled in quantity if satisfactory results are not obtained

within two weeks.

Three other points concerning iron therapy should be emphasized. One is that oral iron medication in rare instances may cause gastrointestinal complaints. If this occurs, the ferrous sulfate may be given in enteric coated tablets, or it may be administered after meals, and if necessary the dose may be reduced to one 0.3 gram (5 grains) tablet daily, and increased to the point of tolerance. If the patient is constipated, then ferric ammonium citrate may be given in capsules of 1.0 gram (15 grains) three times daily. A preparation which is usually tolerated well is ferrous gluconate which may be prescribed in doses of 0.6 to 1.0 gram (10 to 15 grains) three times daily. Finally, if the patient has a severe anemia, and all of these measures fail, and this occurs rarely in my experience, blood transfusions may be given. Not only do they supply red blood cells and hemoglobin, but each 500 cc. of blood provides about 250 milligrams of iron.

It is also my firm belief that the proper doses of iron *alone* will accomplish as good results as combinations with preparations such as Ventriculin, liver, folic acid, copper and other substances. In other words, I do not believe that anything can be added to iron which will enhance the therapeutic effect of this metal. Furthermore, in my opinion, there is no place for the parenteral use of iron. This is because it can usually be given effectively by the oral route and second, because when parenteral iron is given in adequate doses, it may be responsible for serious and sometimes alarming symptoms.

Although iron is always indicated in any patient who might have an iron deficiency anemia, special attention should be given to the administration of this element in patients with peptic ulcer on account of the large amount of alkali administered and the tendency to chronic hemorrhage; in pregnancy and lactation and adolescent girls, due to increased needs on account of growth and, in the latter, the presence of menstrual periods; and in donors who repeatedly give blood, especially females, in the period between puberty and the menopause.

The Anemias of Pregnancy: A true anemia of pregnancy may be defined as one due to the gravid state in which there is a greater reduction in the hemoglobin or the red blood cells or both, than that observed in the physiological anemia of pregnancy. The latter is a normal condition due to dilution resulting from the increased blood volume which reaches a maximum of about 26 per cent in the last trimester of preg-

nancy. This dilution effect alone may cause a decrease in the hemoglobin to 10 grams (64 per cent) per 100 cc. of blood, and a red blood cell count of 3.5 million per cubic millimeter.

Between 25 and 50 per cent of all pregnant women have a true anemia of pregnancy, as defined above. Ninety-five per cent of such anemias are of two main types, microcytic or macrocytic. The former is due to an iron deficiency which either pre-exists in the mother prior to pregnancy and is accentuated by the dilution factor, or it is caused by added iron needs associated with the growth of the fetus, formation of the placenta, loss of blood at delivery, and lactation. In some a combination of these factors is active. Such an anemia which occurs in 15 to 30 per cent of all gravid women, is of the hypochromic microcytic type and responds readily to iron medication. Macrocytic anemia of pregnancy may result, in the opinion of Bethell,[4] from a deficiency of animal protein in the diet. It is usually mild, with a red blood cell count in the vicinity of 2.5 to 3.0 million per cubic millimeter, and a hemoglobin of 7.8 to 9.4 grams (50 to 60 per cent). When the anemia is more severe, it is designated the "pernicious anemia of pregnancy."

These anemias may be prevented by two simple measures. They are the administration of iron and the addition of animal protein to the diet as soon as the pregnancy is recognized. The latter may be accomplished usually by adding a minimum of one egg, a pint of milk, and a serving of lean meat to the regular food intake. If the macrocytic anemia is severe, it may be treated by the oral use of 10 to 15 milligrams of folic acid daily, or the daily use of 4 cc. of crude liver extract intramuscularly. It is of interest that refined liver extract is usually ineffective in this condition, and in one patient treated by Bethell[5] with vitamin B_{12} there was no response.

The Macrocytic Anemias: The macrocytic anemias are important, not because they are as common as other types of anemia, but because specific therapeutic remedies are available and recently new ones have been introduced. These anemias include pernicious anemia, the anemia of sprue, the anemia following total gastrectomy, intestinal anastomoses and intestinal stricture, the macrocytic anemia of infancy and pregnancy, the anemia due to widespread liver disease and to dietary inadequacies, and the anemia associated with fish tape worm infestation.

The treatment of choice undoubtedly is the use of refined liver extract (1 cc. equals 15 units) intramuscularly. In relapse the patient

should be given 1 cc. (15 units) three times weekly for two weeks or until the red blood cell count is 3.0 million per cubic millimeter; then the dosage is reduced to 1 cc. (15 units) two times weekly, and continued until the red blood cell count is normal. Following this, 1 cc. (15 units) intramuscularly should be given every two weeks for an indefinite period as a maintenance dose. This should be doubled if 1) there is a persistence or recurrence of the paresthesia of the extremities or other subjective evidence of neurological involvement, 2) if the glossitis is not controlled, or 3) if the patient develops any type of infection.

It is probable that folic acid in daily doses of 10 to 15 milligrams orally, or intramuscularly if necessary, is a satisfactory treatment of sprue, the macrocytic anemias of pregnancy, nutritional macrocytic anemia, and the anemia due to intestinal disturbances. Folic acid, however, is without beneficial effect on the neurological lesions of pernicious anemia and in some cases it appears to accelerate their development. As this is a possibility, it is not even advisable to use the combination of folic acid and liver extract in the treatment of this disease.

Allergy Due to Liver Extract: A small percentage of patients will develop allergic manifestations during the course of treatment with parenteral liver extract, either while the injections are being given at regular intervals, or after they have been omitted and are then resumed. This is an organ rather than a species sensitivity. It should be treated by substituting oral for the parenteral therapy, or even better, by desensitizing the patient to parenteral liver extract. There is a possibility that antihistaminic drugs such as pyribenzamine may prevent the allergic manifestations and they should be given a trial. If vitamin B_{12} proves to be effective and is available commercially, it may be possible to substitute it for liver extract therapy and thus avoid the allergic manifestations.

Vitamin B_{12}: A new factor (LLD), discovered by Shorb,[6] and shown by West[7] to possess the property of inducing hematopoietic remissions in patients with pernicious anemia, has been isolated by Rickes and his associates[8] and designated as vitamin B_{12}. The intramuscular administration of as small amounts as 1 gamma (1/65000 of a grain) daily to patients with pernicious anemia will produce a maximum reticulocyte rise and an optimum increase in the hemoglobin and red blood cell count of the peripheral blood. Furthermore, it has been shown that it also influences favorably the neurological manifestations,[9] and lesions

of the mucous membranes.[10] Injection of this vitamin in a patient with pernicious anemia who was allergic to liver extract produced no untoward symptoms.[9] The administration of 1 gamma daily to a patient with severe pernicious anemia of pregnancy was not followed by a favorable response although in the same patient folic acid was effective.[5] The independent isolation of a similar or identical factor with vitamin B_{12} has been accomplished by Smith.[11]

Recently Rickes and his associates[12] have discovered that the activity of the compound cannot be separated from its reddish color which is due to cobalt. Furthermore, they have determined that the degree of activity is directly proportional to the depth of this color. West[13] has demonstrated that this element in the form of cobaltous ion administered subcutaneously either as the acetate or the chloride is without effect when given to patients with pernicious anemia.

Although definitive proof is lacking, it is thought that this vitamin is identical with the erythrocyte maturing factor, that is, the active principle effective in the treatment of patients with pernicious anemia.

Microbial Animal Protein Factor Concentrate: Recently it has been reported by Stokstad and his co-workers[14] that a microbial animal protein factor concentrate, derived from the growth on artificial media of rod-shaped microörganisms present in hen feces, will produce a potent anti-pernicious anemia material. Concentrates of this material produced microbiologically and found to possess animal protein factor activity in the chick also were effective in inducing a hematological remission in patients with pernicious anemia. It is not possible, according to the authors, to conclude that this substance is identical with the material in liver which produces the same effect in humans. It is their opinion, however, that the bacterial extract may contain complexes of the anti-pernicious anemia factor which are utilized by chicks to produce the animal protein factor, and less effectively by patients with pernicious anemia as sources of anti-pernicious anemia factor.

The Etiology of Pernicious Anemia: Since the discovery of folic acid, and more recently of vitamin B_{12}, the entire subject of the etiology of pernicious anemia has been reopened for consideration. Following the irrefutable observations on the etiology of this condition by Castle in 1928, it has been clearly established that some unidentified material in the diet is acted upon by a component of the gastric juice to produce a substance which controls the maturation of the red blood cells in the

bone marrow.

If vitamin B_{12} is considered to be the anti-pernicious anemia principle, the difficulty arises chiefly with our incomplete knowledge as to how to incorporate into Castle's theory, the function of folic acid and its conjugates. A purely tentative explanation would be that 1) the extrinsic factor in the food reacts with 2) the intrinsic factor in the gastric juice, to form 3) the active principle which may be vitamin B_{12}. This material which is stored in the liver is concerned, among other functions, with the release of folic acid from its conjugated form. Folic acid is required for the normal production of red blood cells. This theory is subject to revision upon the discovery of new information. It is obviously incomplete as an explanation is not provided to account for the degenerative changes in the nervous system which are probably due to the lack of some necessary substance essential for the maintenance of normal nutrition of the nerve cells.

Agranulocytosis: Agranulocytosis is not a common disease but it should be kept in mind constantly because it is probably always due to a drug sensitivity, and its early recognition and prompt treatment is essential in order to avert fatalities. Although a great majority of cases are due to sensitivity to some drug, occasionally it is not possible to demonstrate the causative factor. The following are known to be responsible for the disorder: 1) the sulfonamide drugs, including sulfanilamide, sulfapyridine, sulfathiazole, sulfadiazine, and succinyl sulfathiazole; 2) thiouracil and rarely propylthiouracil; 3) aminopyrine and closely allied products as novaldin and causalin; 4) gold; and 5) arsphenamine. It has been claimed that other drugs may cause this condition but there is no substantial proof in support of this. Recently it has been reported that Tridione, an anti-convulsant agent, may cause a severe leukopenia but this is in association with other evidences of aplastic anemia, namely, a reduction in the platelets and red blood cells.[15]

A word of advice is pertinent in regard to this disease. When a patient is receiving a drug which is known to cause agranulocytosis, it should be made clear that if a sore throat, skin rash, chills or fever develop, then the drug should be omitted promptly, and a white blood cell count obtained. If this is decreased significantly, then energetic treatment with penicillin, 40,000 to 80,000 units intramuscularly every three hours should be given. Death in this condition is always due to

sepsis but if the disease is detected in its early stages, the causative drug eliminated, and penicillin given, it is unlikely that any patient will succumb to the condition.

Nitrogen Mustard Therapy: The most satisfactory routine treatment of Hodgkin's disease, lymphosarcoma and chronic leukemia, is roentgen irradiation. In Hodgkin's disease especially, when this becomes ineffective, the physician would be denying the patient an opportunity for further improvement if nitrogen mustard therapy[16] were not given. In at least two-thirds of such patients, this chemotherapy will result in distinct but regrettably brief remissions. These are indicated by temporary subsidence of fever, regression of the lymphadenopathy, hepatomegaly, and splenomegaly, and an improvement in the cutaneous manifestations. The remissions persist from a month to eight or ten months, and in occasional instances for longer intervals. It is not possible, however, to predict the duration of the salutary effects in any given patient. Further, there is some evidence which suggests that patients with Hodgkin's disease who have become refractory to roentgen irradiation may be resensitized to it by nitrogen mustard therapy. Also the latter form of treatment is useful in the occasional patient with Hodgkin's disease in whom intensive roentgen ray therapy to the mediastinum is desirable but in whom fibrosis to the lungs develops. In such patients, the nitrogen mustary therapy has no such adverse effects on pulmonary tissue.

The drug produces some beneficial results in patients with chronic myelogenous and lymphatic leukemias, and has been tried but without significant benefit, in the acute leukemias. While it does produce remissions in some patients with chronic leukemia, in polycythemia vera, and in lymphosarcoma, the results attained are not comparable with those produced by irradiation. One of the most recent publications dealing with the therapeutic effect of the nitrogen mustards is that of Zanes and his co-workers.[17]

It has been our custom to administer nitrogen mustard in a dosage of 0.1 milligram per kilo of body weight, every other day for four doses, but in no instance to give more than a total dosage of 24 milligrams in any one course. Following each nitrogen mustard injection in the form of the methyl-bis compound, there was rather distressing nausea and vomiting which persisted for six to eight hours. The new preparation, SK 136, the chemical name of which is 1,3,-Bis [Bis-

(Beta-Chloroethyl)] Aminopropane Dihydrochloride, when administered in the same dosage, is equally effective and does not produce these symptoms. Almost immediately following its injection, however, there is anorexia, depression and malaise of appreciable extent which may persist for 12 to 24 hours. Another untoward effect of chemotherapy is thrombosis of veins following the intravenous treatment. This may be averted by injecting the medication directly into the rubber tube through which normal saline is flowing into a vein. Undoubtedly the most serious complication of the treatment is the transitory destructive effect on the hematopoietic tissue. This manifests itself within 4 to 5 days following treatment by a decrease in the red blood cells, the white blood cells and the platelets of the circulating blood, and continues for about 3 to 4 weeks. In one of our patients with Hodgkin's disease, the total white blood cell count fell to 250 per cubic millimeter, but in most instances the decrease is much less than this. This untoward effect on the bone marrow is temporary, and all evidence of it usually disappears within a few weeks. It should be emphasized, however, that the margin between the therapeutic and toxic dose which might be responsible for serious damage is slight, and hence the drug should be used in all cases with caution.

Leukemia: While various new forms of therapy have become available recently, it has not been demonstrated that they prolong life significantly. Their use is amply justified, however, by the relief of symptoms and increased activity of the patient. No one would deny a patient the striking improvement which follows treatment, even though it is transient. Roentgen ray irradiation still remains the most satisfactory treatment for routine use. This is because it is more generally available, its dosage is easily controlled, and after many years of experience, its effects are predictable with greater certainty. In the past this therapeutic agent has undoubtedly been given to patients with leukemia in excessive dosage, with resultant harm to all the hematopoietic elements of the body. While the success of irradiation depends on the greater sensitivity of the leukemic cells to it, as compared to the erythrocytes and platelets, the difference between a toxic and therapeutic dose is slight. Hence the minimal dose which gives the optimum effect should be employed.

In my opinion, patients with chronic myelogenous leukemia should be treated with the "spray" or total body irradiation technique. An

exception to this is in patients whose outstanding complaint is pain in the region of a greatly enlarged spleen. This may be promptly relieved by the localized irradiation over this area. The dose should be small when the "spray" technique is used, not to exceed 150 roentgens during a single course of treatment, over a period of two weeks. Patients with chronic lymphatic leukemia appear to respond more satisfactorily to the localized form of treatment.

In my opinion, one mistake which has been made in the past is in permitting the symptoms of relapse to progress too far before additional therapy is given. With the earliest symptoms of relapse or, in the absence of symptoms, with the elevation of the white blood cell count to 40,000 per cubic millimeter, serious consideration should be given to further roentgen therapy.

Radioactive phosphorus, P^{32}, is another form of systemic irradiation which is of value in the treatment of chronic leukemia. When given in single doses of 4 to 6 millicuries intravenously and repeated, if necessary, in the same dosage in not less than four months, the results are comparable to those produced by the roentgen ray. Such treatment possesses no advantages, however, except that it is easily given, and there is an absence of irradiation sickness. On the other hand, as the situation is at present, it requires certain apparatus and experienced workers to control the administration of the preparation, and caution must be used in its use. Certainly it cannot be said that the practitioner is depriving the patient of a superior form of treatment, if roentgen ray therapy is given instead of radioactive phosphorus.

Urethane in the Treatment of Leukemia: In 1946 Paterson and her associates[18] reported the favorable effect of urethane (ethyl carbamate) in patients with leukemia, and concluded that this drug produced comparable results to those observed following the use of the roentgen ray. Although the exact mode of action of urethane is unknown, it is thought that its favorable effects are produced by inhibition of the rate of mitotic cell division of neoplastic cells. Recently a summary of our knowledge on this subject has been published by Berman and Axelrod.[19]

Our results in a series of patients have been promising. Treatment has been as follows: enteric coated tablets, 0.32 gram (5 grains) each, are given three times daily. On successive days the dosage is increased to a total of 4, 5, 6, 7, 8, 9 such tablets daily, with a maximum daily dosage of about 3.0 grams (45 grains). If this dose is tolerated, it

should be continued, preferably until a normal white blood cell count is reached. The dose should be decreased if gastro-intestinal symptoms are provoked.

It requires from 15 to 90 days, with an average of 21 days, for the leukocyte count to fall to normal. The white blood cell count should be determined every two to three weeks, and when it reaches normal the dose should be reduced to 1.0 gram (15 grains) daily.

The present experience with the use of urethane in the treatment of leukemia does not warrant a final conclusion. It is a simple therapeutic measure which has promise of effecting changes similar to those induced by irradiation. The possibility of harm resulting from over-treatment makes it necessary for the patient to be under observation, and the leukocyte count should be determined at intervals. Some believe that urethane is resolved into urea and carbon dioxide in the body. If this is so, consideration should be given to the possibility that injury might result from an accumulation of blood urea in patients with kidney disease when this drug is employed in the doses advised.

In our patients, especially those with chronic myelogenous leukemia, gratifying improvement occurred in a majority of those who received this treatment. Patients with lymphatic leukemia responded less satisfactorily. It is difficult to state the duration of the remissions which are induced, but in one of our patients it has exceeded a year. Although the white blood cell count is frequently reduced in patients with acute leukemia when urethane is given, the general course of the disease does not seem to be influenced.

Folic Acid Antagonists: Recently a number of compounds closely related to folic acid, have been developed which have the property of actually inhibiting the growth-stimulating action of folic acid toward certain bacteria by interference with enzyme systems. The effect of such antagonists, as they are called, in acute leukemia was first reported by Farber and his associates in June of 1948.[20] During the past few months Bethell and others[21] have treated a group of patients with leukemia and related disorders with aminopterin, a folic acid inhibitor (4-aminopteroyl glutamic acid). In patients with myelogenous leukemia, the most important change was a fall in the granulocyte count of the peripheral blood, and a progressive decrease in myeloid activity of the bone marrow as shown by sternal puncture. Prolonged administration of larger doses appeared to depress the formation of the erythrocytes.

In some patients with myelogenous leukemia there was a notable decrease in symptoms, and the size of the spleen. On the discontinuance of the therapy, increased activity of the leukemic process rapidly recurred. In one patient, it was possible to reverse the action of the antagonist by the administration of folic acid in large doses.

Our observations indicate, in general, that in adults with acute leukemia the effect of the antagonist is to convert the condition to an aplastic anemia. There appears to be a "wiping out" of the granulocyte series. The action of the antagonist is not entirely salutary as indicated by the development of ulcerative lesions in the mouth and the appearance of alopecia in some patients. It is possible this may result from the action of the antagonist on other components of the vitamin B complex.

The preliminary studies do not indicate that the course of the disease is materially altered by aminopterin therapy although promising results have been observed in children with acute leukemia. It is possible, however, that a preparation with such a unique and powerful action may be altered to provide a more effective control of the leukemic states.

Polycythemia: This condition may be treated satisfactorily by the use of three therapeutic measures, as follows: 1) Phlebotomy, with the reduction in the hematocrit to 50 per cent or the removal of a total average amount of 1500 cc. of blood at the rate of 300 to 500 cc. every third day; 2) the use of total body roentgen irradiation with treatment every other day until the white blood cell count is below 4,000 per cubic millimeter; and 3) the use of radioactive phosphorus in a dose of 4 to 6 millicuries intravenously, not to be repeated for a period of four months.

It is often advisable, if the patient is suffering from acute symptoms of polycythemia, to remove a sufficient quantity of blood, as indicated above, to make the patient comfortable and then give either roentgen or radioactive phosphorus irradiation. Total body irradiation will control the disease satisfactorily[22] although it may be necessary to repeat the treatment in several months. In some patients, however, additional therapy is not necessary for two years. The ideal treatment appears to be with radioactive phosphorus which can be given easily, and often the patient is maintained in good condition without additional therapy for three years or more.

The question has been raised that irradiation, especially with radio-

active phosphorus, may increase the possibility of transforming polycythemia into leukemia. It has been known that such a transformation does occur spontaneously and there is no proof, in my opinion, that the use of radioactive phosphorus makes it more likely.

Hemolytic Anemias: If the diagnosis of hemolytic anemia is established, and such causes as infection, chemicals and others are excluded, then an attempt should be made to differentiate between the two main varieties of the condition, namely the congenital and the acquired. If another case exists in the blood relatives, that is, of course, strong evidence in favor of the hereditary type. In addition, the following diagnostic points are of assistance, but are not absolutely conclusive, in differentiating between the two. In congenital hemolytic anemia, the active manifestations of the disorder are noted in childhood, microspherocytes are usually present in the circulating blood, and there is always evidence of increased fragility of the erythrocytes. On the other hand, in acquired hemolytic anemia, the symptoms are not likely to appear until adolescent or young adult life; spherocytes are not commonly present; increased fragility of the erythrocytes is observed in only 40 per cent of the cases; frequently there is hepatomegaly and often there is enlargement of the lymph glands; a leukopenia is commonly present; and not infrequently there are a few abnormal lymphocytes and monocytes in the circulating blood.

In the congenital variety, the results of splenectomy are uniformly satisfactory provided accessory spleens which may be present, are also removed at operation. Splenectomy is advisable, therefore, as soon as the diagnosis is established. In patients with acquired hemolytic anemia, surgical treatment is not always indicated because the condition may be due to some cause such as drugs or to infection, and also because even in the idiopathic type, the operation is helpful in only about two-thirds of the patients. When a patient with the acquired type is encountered, therefore, great care should be employed to exclude all known causes. If this can be done, then the patient should be observed for a few weeks to determine if his condition is improving, remaining stationary, or progressing. If the latter is the case, then splenectomy is indicated.

It should be kept in mind that severe and even fatal hemolytic reactions may occur in patients with hemolytic anemia following blood transfusions, even though all precautions have been taken in matching

the blood of the donor with that of the recipient. Blood transfusions are indicated, nevertheless, in such patients in some instances before operation, and also in periods of rapid destruction of blood with associated hemolytic shock, and they can often be given safely. The following procedure is advisable. After careful matching, 50 cc. of blood should be given slowly. The transfusion is then discontinued and the patient observed for an hour. If no untoward reaction occurs, then the remainder of the blood may be administered over a period of two to three hours. The importance of this is emphasized by the knowledge that about 50 per cent of patients succumb who have received 500 cc. of incompatible blood. On the other hand, the hemolytic destruction of 50 to 100 cc. is rarely if ever associated with a fatal outcome. If a patient with hemolytic anemia is in shock and cannot be given blood transfusions on account of destruction of the injected red blood cells, then plasma transfusions should be employed liberally to combat the condition.

REFERENCES

1. Dieckmann, W. J. and Wegner, C. R. Blood in normal pregnancy; blood and plasma volumes, *Arch. Int. Med.*, 1934, *53*:71.
2. Sturgis, C. C. and Bethell, F. H. Determination of hemoglobin, sedimentation rate, and packed volume of erythrocytes as a routine procedure at the time of hospital registration, *Univ. Hosp. Bull., Ann Arbor*, 1942, *7*:101.
3. Rundles, R. W. and Falls, H. F. Hereditary (sex-linked) anemia, *Am. J.M.Sc.*, 1946, *211*:641.
4. Bethell, F. H., Gardiner, S. H. and MacKinnon, F. Influence of iron and diet on the blood in pregnancy, *Ann. Int. Med.*, 1939-40, *13*:91.
5. Bethell, F. H., Myers, M. C. and Neligh, R. B. Vitamin B_{12} in pernicious anemia and puerperal macrocytic anemia, *Proc. Central Soc. Clin. Research*, 1948, *in press*.
6. Shorb, M. S. Activity of vitamin B_{12} for the growth of *Lactobacillus lactis*, *Science*, 1948, *107*:397.
7. West, R. Activity of vitamin B_{12} in Addisonian pernicious anemia, *Science*, 1948, *107*:398.
8. Rickes, E. L., Brink, N. G., Koniuszy, F. B., Wood, T. R. and Folkers, K. Crystalline vitamin B_{12}, *Science*, 1948, *107*:396.
9. Berk, L., Denny-Brown, D., Finland, M. and Castle, W. B. Effectiveness of vitamin B_{12} in combined system disease, *New England J. Med.*, 1948, *239*: 328.
10. Spies, T. D. Relief of pellagrous glossitis with synthetic folic acid, *Am. J. Med.*, 1946, *1*:473.
11. Smith, E. L. Purification of anti-pernicious anæmia factors from liver, *Nature*, 1948, *161*:638.
12. Rickes, E. L., Brink, N. G., Koniuszy, F. R., Wood, T. R. and Folkers, K. Vitamin B_{12}, a cobalt complex, *Science*, 1948, *108*:134.
13. Rickes, E. L. *et al. Personal communication.*
14. Stokstad, E. L. R., Page, A., Jr., Pierce, J., Franklin, A. L., Jukes, T. H., Heinle, R. W., Epstein, M. and Welch, A. D. Activity of microbial animal protein factor concentrates in pernicious anemia, *J. Lab. & Clin. Med.*, 1948, *33*:860.
15. Carnicelli, T. J. and Tedeschi, C. G.

Fatal acute pancytopenia following tridione treatment, *New England J. Med.*, 1948, *238*:314.

16. Gilman, A. and Philips, F. S. Biological actions and therapeutic applications of B-chloroethyl amines and sulfides, *Science*, 1946, *103*:409.
17. Zanes, R. P., Jr., Doan, C. A. and Hoster, H. A. Studies in Hodgkin's syndrome, nitrogen mustard therapy, *J. Lab. & Clin. Med.*, 1948, *33*:1002.
18. Paterson, E., Haddow, A., Thomas, I. and Watkinson, J, M. Leukemia treated with urethane compared with deep x-ray therapy, *Lancet*, 1946, *1*:677.
19. Berman, L. and Axelrod, A. R. Effect of urethane on malignant disease, *Am. J. Clin. Path.*, 1948, *18*:104.
20. Farber, S., Diamond, L. K., Mercer, R. D., Sylvester, R. F., Jr. and Wolff, J. A. Temporary remissions in acute leukemia in children produced by folic acid antagonist, 4-aminopteroyl-glutamic acid (aminopterin), *New England J. Med.*, 1948, *238*:787.
21. Bethell, F. H., Neligh, R. B., and Meyers, M. C. Effect of a pteroylglutamic acid inhibitor in cases of leukemia and related disorders, *Proc. Am. Federation Clin. Research*, 1948, *in press*.
22. Richardson, W. and Robbins, L. L. Treatment of polycythemia vera by spray irradiation, *New England J. Med.*, 1948, *238*:78.

A CRITIQUE OF THE PRESENT STATUS OF THE PSYCHOTHERAPIES*

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BEFORE ONE can write a meaningful critical evaluation of the psychotherapies of today, he must attempt to define the types of treatment methods which are commonly assumed to be distinguishable varieties of psychotherapy. This is no easy task, for there exists no such generally accepted classified listing of the psychotherapies. A motley array of adjectives is found to designate brands of psychotherapy which are supposedly different from each other but which actually overlap each other in manifold ways. It will be a necessary preliminary task for us to review the terms commonly used in psychiatric literature and in ordinary professional parlance to designate various types of psychotherapy.

In a survey of usages which probably falls short of being exhaustive, I have noted that the type of psychotherapy may be characterized from any one of a number of frames of reference:

1. With regard to the preponderant attitude taken or influence attempted by the therapist; e.g., suggestion, persuasion, exhortation, intimidation, counselling, interpretation, re-education, re-training, etc.

2. With regard to the general aim of the therapy; e.g., supportive, suppressive, expressive, cathartic, ventilative, etc.

3. With regard to the supposed "depth" of the therapy—superficial psychotherapy and deep psychotherapy.

4. With regard to the duration—brief psychotherapy and prolonged psychotherapy.

5. With regard to its supposed relationship to Freudian psychoanalysis, as, for example, orthodox, standard, classical, or regular psychoanalysis, modified psychoanalysis, wild analysis, direct psychoanalysis, psychoanalytic psychotherapy, psychoanalytically oriented psychotherapy, psychodynamic psychotherapy, psychotherapy using

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the dynamic approach, and psychotherapy based on psychoanalytic principles.

6. With regard to the ex-Freudian dissident who started a new school of psychotherapy. Thus we have Adler's individual psychology with its Adlerian "analysis," Jung's analytical psychology with its Jungian "analysis," the Rankian analysis, the Stekelian analysis, and the Horney modifications.

7. With regard to whether patients are treated singly or in groups—individual psychotherapy and group psychotherapy.

8. With regard to whether the psychotherapy is "directive" or "non-directive," an issue emphasized strongly by the Rogers group of psychologists.

9. With regard to the adjunctive technique which is coupled with psychotherapy; e.g., narcotherapy (narcoanalysis, narcosynthesis), and hypnotherapy (hypnoanalysis), the first using drugs and the second hypnosis for technical reasons to be discussed later.

It is not surprising that both physicians and the lay public regard this welter of terminology as something less than scientific, and that patients seeking help for emotional distress are often confused as to where to find that help and as to what type of psychotherapy to trust. In defense of the present confusion one can remind himself that although psychotherapy is said to be the oldest form of medical treatment, it is also one of the very latest to achieve a scientific, rational basis, i.e., to rest on a basic science of dynamic psychology. Because of its partial derivation from many unscientific and extra-scientific sources—primitive magical practices of tribal medicine men, religious rites, parental exhortations and commands, mysticism, common-sense advice and intuitive insights of friends, and downright quackery, to mention but a few—psychotherapy has among its practitioners today not only many lay fakirs but also a good many physicians whose training in dynamic psychology is grossly inadequate. Also, even among the best trained psychiatrists there exist some honest differences of opinion regarding principles and techniques of psychotherapy. However, research and experimentation continue to expand, and slowly the phenomena of artful and intuitive psychotherapeutic influence are translated into scientific principles and techniques.

It is impossible to overstate the importance of dynamic psychology as a basic science on which all competent psychotherapy must rest.

Without an underlying structure of psychodynamics and psychopathology, in which the psychotherapist must be well trained, all psychotherapy is at best empirical, at the worst the blind leading the blind. No valid critique of the psychotherapies is possible except in relation to the penetrating understanding of human personality and behavior provided by dynamic psychology, the chief contributions to which have been made by psychoanalysis.

It seems necessary, therefore, to review for an essentially non-psychiatric medical audience the theoretical essentials in modern dynamic psychology. The cornerstone of dynamic psychology is the concept of repression. As the psychic structure of the human personality develops in infancy and childhood, the primitive erotic and aggressive impulses come to be opposed by counter-impulses deriving from the child's training and adaptive experiences. The chief counter-impulse is repression, which banishes from consciousness–but not from continued active existence in the unconscious–those impulses, some native and some stimulated by specific experiences, which the child discovers are condemned and forbidden expression by its upbringers. Both the strength of the alien impulses and the child's capacity to oppose them are partially determined by his native constitution, partly by the nature of his early experiences, and partly by the character and upbringing methods of those adults who rear him. Some condemned impulses are simply repressed, along with their associated fantasies and affects; others are modified in partial expression and partial repression, assisted by other defense mechanisms. Topographically the unconscious is regarded as the repository of repressed impulses and forgotten memories, the preconscious as that part of the mind in which reside the rememberable but currently unattended to memories, and the conscious mind as the aware, focussing, thinking portion of the psychic structure. Viewed dynamically, the primitive impulses arise out of biological and psychological drives identified collectively as the Id, while the opposing, defensive forces arise from Ego, or organized part of the personality, and the Super-ego–roughly the conscience. The sum total of these dynamic internal and external interactions, plus constitution and native intellectual endowment, equals the developing personality in all of its individual uniqueness. While the major battle between opposing internal forces appears to be settled at about age five or six, thus forming the basic personality structure, there is a continuous internal interaction

and a constant external adaptive attempt throughout life, with special crises during adolescence and in reaction to the Protean forms that stressful life experiences can take. Also, each individual, however healthy his adaptation appears to be, has his own particular psychological areas of vulnerability to stress, and he may be precipitated into clinical neurotic or psychotic illness by experiences whose qualitative or quantitative nature exceed his capacity to master them through healthy adaptive methods.

This highly condensed exposition of dynamic psychology with its emphasis on the uniqueness of the individual will, I hope, be sufficient to serve as a background for the following proposition, namely, that competent treatment of a patient by psychotherapeutic means requires of the psychotherapist:

1. That he be thoroughly grounded in the basic science of dynamic psychology.

2. That he be well trained in clinical methods of evaluating the individual patient, not only in terms of general comparison with others presenting similar clinical pictures, but also in terms of the uniquely individual forces and factors in each individual patient.

3. That he then utilize, from among the available psychotherapeutic approaches and techniques, those particular ones which, according to his best clinical judgment, are most appropriate in a given case.

4. A fourth prerequisite does not follow logically from the previous argument but is of an importance at least equal to the other three, namely, that the psychotherapist be a person of integrity, objectivity, and sincere interest in people, and that he be relatively free from personal conflicts, anxieties, biases, emotional blind spots, rigidities of manner, and settled convictions as to how people should properly behave.

This last prerequisite for psychotherapeutic work requires some amplification. Unlike the situation in other fields of medical therapy, the man well grounded in the basic science underlying his therapy, well trained in diagnostic methods, and possessing technical competence to use the indicated therapy may still, in psychotherapy, be a poor practitioner if he is personally anxious, rigid, or full of moral convictions. Other therapies in medicine can be competently performed, with good results on patients, without these personal qualities, largely because a great deal of medical and surgical treatment consists of doing some-

thing *to* the patient. To be sure the personal qualities in a physician which cause his patients to love and trust him are exactly the ones which make him a real physician rather than a mechanical artisan; but far greater emotional demands are made on the psychotherapist. The nature of the subject material in psychotherapy, the intense personal give and take in the patient-therapist relationship, the enormously increased possibilities of anti-therapeutic personal involvement, the self knowledge in the therapist required both to understand his patients and to steer a sound therapeutic course with them, all require of the psychotherapist certain personal qualities not essential to other medical specialists. It is not particularly difficult for physicians to acquire protective attitudes of detachment in respect to those bodily elements and products—blood, pus, urine, diseased tissue, mucus, feces, guts—which so upset the squeamish layman, and this detachment serves the physician in good stead as he works coolly and efficiently at his therapeutic task. But this sort of detachment in a psychotherapist is not only no protection against the psychological products of his patients, it actually hampers and distorts his therapeutic work and, if extreme, even disqualifies him from undertaking to deal with psychopathology and psychotherapy. The counterphobic attitude may be sufficient for competent work in physiology, pathology, and surgery; it is a poor and brittle defense for work in psychiatry and psychotherapy.

Such personal considerations with regard to the psychotherapist raise important questions regarding selection of candidates for psychiatric training, and regarding the importance of personal psychoanalysis as a part of psychoanalytic and psychiatric training. Certainly every psychiatrist who wishes to do psychoanalytic therapy should have full psychoanalytic training, including, of course, the personal analysis. It might also be said that every psychiatrist who expects to practice major psychotherapy of any kind should have full psychoanalytic training, just as every physician who plans to do major surgery should have full surgical training.

I have so far attempted to show that the terminology designating supposed varieties of psychotherapy is very confusing because of the many frames of reference in which identifying adjectives were applied, and to indicate that a critique of these psychotherapies is not possible until a valid frame of reference is established. I then tried to show that familiarity with the basic science of dynamic psychology, and the

clinical techniques derived from it is necessary to provide a valid frame of reference for a critique. This led to the collateral but vital point of the psychotherapist's personal suitability. It is necessary to establish one more phase of this frame of reference. This has to do with the nature and vicissitudes of the patient-physician relationship in psychotherapy.

Most physicians are not much concerned about the attitudes, emotions, and fantasies their patients have about them as long as the patients are coöperative, don't go to other physicians, and pay their bills for professional services. Occasionally physicians are startled to encounter outbursts of unprovoked hostility or professions of love or jealousy, or suspicion from their patients. I suppose the usual result is that the patient is then discharged by that physician in the event the physician cannot "talk him out of his nonsense." Many psychiatrists of the past (and some in the present) have been more concerned about emotional reactions of patients to them, but have thought of them in terms of "good rapport" or the lack of it, without paying much attention to the exact nature of these reactions, whether friendly or hostile. Sigmund Freud, picking up a cue noted but abandoned by Josef Breuer, had the genius to follow through to a penetrating study of patients' emotional attitudes toward their doctors and to bring this group of phenomena into both the theoretical framework of dynamic psychology and the clinical framework of psychotherapy. He saw that whereas the various emotional reactions of the individual patient appeared at first to be irrational and unprovoked, actually these attitudes could be understood the same as other psychological phenomena in the patient could be understood, such as recovered memories, dreams, fantasies, and so on, and could, instead of being emotionally reacted to by the therapist, provide him with material for fresh insights into his patient. Freud called these reactions "transference" because of his understanding of them as emotions originally felt toward other significant persons in the patient's past experience, and now transferred to the doctor. He discovered that their nature could be interpreted to the patient, and that such interpretations, when correctly timed and accurately expressed, had significant therapeutic effect on the patient. Thus the theoretical understanding and clinical use of transference phenomena became one of the significant contributions of psychoanalysis to the field of psychiatry, and, indeed, to the practice of medicine in general, for trans-

ference reactions by patients are by no means limited to those being treated psychotherapeutically.

Freud also had the objectivity to observe and analyze his own reactions to patients, and concluded that all psychotherapists would have their own particular tendencies to react inappropriately (that is, inappropriately from the standpoint of correct therapeutic technique) to the material, or behavior, or persons of their patients. He called such reactions and reaction tendencies "counter-transference," and bade all analysts to be acutely observant of themselves in this regard so that they might analyze and dissipate these counter-transference reactions without letting themselves be unwittingly influenced by them to the detriment of their therapeutic efforts. Again, such counter-transference reactions are not confined to psychiatrists, psychoanalysts, or psychotherapists, but are present in all physicians toward their patients, albeit with considerably less significance, for the most part, in therapy other than psychotherapy. Once more, then, we see the importance for the psychotherapist of those personal qualities of integrity, objectivity, sincerity, and relative freedom from emotional blind spots.

I have now used almost half of my time to develop the background frame of reference in which any psychotherapy may properly be critically evaluated. The following elements have been emphasized:

1. The theoretical understanding of human personality provided by dynamic psychology.

2. The clinical evaluation of each individual patient—the nature and intensity of his internal and external conflicts, the genetic history of those conflicts, his particular defenses against anxiety, his strengths as shown by past adaptations and achievements, his vulnerabilities and weaknesses as shown by the extent of his decompensation, his way of relating initially to the therapist, his intelligence and its possible impairments, the intactness of his concept formation, his loyalty to reality, his capacity for introspection and self-confrontation, and so on.

3. The utilization of psychotherapeutic techniques based on sufficient knowledge of dynamic psychology and applied appropriately to the individual case in the light of the clinical evaluation.

4. The personal qualifications and suitability of the psychotherapist, and, we may now add, his capacity to recognize and deal with transference manifestations in his patients and counter-transference tendencies in himself.

If these four criteria provide a valid frame of reference in which to evaluate psychotherapy, it is readily seen that those psychotherapists who have a fixed system of treatment for all patients who come to them are practicing poor psychotherapy. This is true whether it refers to those therapists who treat all patients with such banal exhortations as "Buck up," "Go home and forget it," "Stop worrying about that," "Pull yourself together," "Don't cross bridges until you come to them," and so on; to therapists who treat all patients by assigning reading for subsequent interview discussions in prepared booklets on how to live; to psychoanalysts who put all patients on the couch and tell them to free-associate; or to therapists who keep the syringe loaded with sodium pentothal for each patient, or who routinely start their hypnotic maneuvers promptly. One may give insulin to every diabetic, or operate every acute appendix, with, of course, some judgment as to dosage, timing, and collateral measures, but psychotherapy is, or should be, a highly individual matter for each patient. Far too often in current practice the type of psychotherapy used with the patient is determined solely by the limited training and ability of the psychotherapist rather than by either the type of illness the patient has or the type of patient that has the illness.

Of the various possible ways of classifying psychotherapeutic attempts, most psychiatrists would agree that two large groups could be identified—those which aim primarily at support of the patient, with suppression of his symptoms and his erupting psychological material, and those which aim primarily at expression. It is actually more appropriate to speak of a group of techniques utilized to accomplish suppression or expression than to speak of sub-groups of psychotherapies under each major heading. Suppressive or supportive psychotherapy, also called superficial psychotherapy, utilizes such devices as inspiration, reassurance, suggestion, persuasion, counselling, re-education, and the like and avoids investigative and exploratory measures. Such measures may be indicated, even though the psychotherapist is well trained and experienced in expressive techniques, where the clinical evaluation of the patient leads to the conclusion that he is too fragile psychologically to be tampered with, or too inflexible to be capable of real personality alteration, or too defensive to be able to achieve insight. Certain recovering schizophrenics or agitated depressions or children might illustrate the fragility, rigid character disorders, certain manics and hypo-

manics, and elderly patients might illustrate the inflexibility, and some paranoid states might illustrate the defensiveness. The decision to use suppressive measures is made actually because of contraindications to using exploratory devices. One can say, then, that supportive or suppressive psychotherapy, with its variety of techniques and devices for accomplishing support and suppression, is a valid psychotherapy provided it is applied on the basis of sound indications and not indiscriminately to all or most patients simply because the particular psychotherapist does not know how to do anything else with the patient, and provided the psychotherapist realizes that transference and countertransference manifestations can and do occur, and need to be handled, even in such superficial psychotherapy. Supportive psychotherapy may be brief or prolonged, as indicated, and may be carried out with individuals or with groups.

It is in the group of psychotherapies intended to be expressive that one encounters the various schools of thought, the adjunctive devices, the more frequent conflicts in theory, and the more significant question of personal suitability of the therapist. Expressive psychotherapies utilize such devices as exploratory probing through questioning, free-association, abreaction, confession, relating of dreams, catharsis, interpretation and the like, all with the purpose of uncovering and ventilating preconscious and unconscious pathogenic psychological material. Elements of support, reassurance, suggestion, advice, and direction are not necessarily excluded, and may, in fact, be consciously utilized. Expressive psychotherapy may be brief and intensive or prolonged, depending on the aims of the therapist and the response of the patient. Expressive psychotherapy is major psychotherapy and should not be undertaken without thorough grounding in dynamic psychology, adequate experience in clinical evaluation, practice under supervision, and personal suitability. Lacking this background, the psychotherapist is extremely likely to get into difficulties. He introduces topics for the patient to discuss without being aware that they are irrelevant to the matters pressing for expression within the patient, or that the patient cannot tackle a given topic until certain defenses are first pointed out and removed. He gives long and sententious theoretical explanations which he regards as interpretations, but which are either then learned as intellectual defenses by the patient or their content ignored while the patient basks in this verbal bath at the hands of the therapist. He permits himself unwittingly

to be drawn into an active role as an ally in the patient's external interpersonal struggles, while remaining oblivious to the provocative shenanigans of the patient which keep these struggles going on. He pounces on dreams or slips of the tongue with ready and pat interpretations which miss the point. He focusses his attention on symptoms, and tries to treat them by interpretation, or special investigatory questioning. He becomes embroiled in transference-countertransference jams and does not know how to extricate himself except by discontinuing the interviews for a while. I cite these common errors as illustrations of what may happen if the inadequately trained psychotherapist undertakes expressive psychotherapy. Needless to say such mishandling complicates the patient's illness exceedingly and renders more difficult the task of the inevitable subsequent psychotherapist.

Competent expressive psychotherapy may have goals which vary considerably. In cases where there has been an acute onset of neurotic symptoms in reaction to a discoverable precipitating event, and the patient's history shows a comparatively healthy course, the therapy may properly consist of thorough ventilation of the reaction to the upsetting event, with the therapist pointing out connections, relationships, and hidden motivations in the limited life area of the setting prior to the event, of the event itself, and of the patient's immediate and later reactions to the event. In skillful hands this is a most rewarding type of expressive psychotherapy. Recovery may be achieved in a very few interviews and the patient is restored to his previous good functioning with insights he would not otherwise have achieved. In such instances there is no therapeutic aim of exhaustive investigation, recovery of infantile memories, or altered ego structure. In other cases which may at first seem similar, the early clinical evaluation uncovers more neurotic difficulties than were at first apparent, and it becomes clear that the patient's adjustment prior to the precipitating event was a precarious one at best. The therapeutic aim may now change to one of more thoroughgoing alteration of the neurotic personality structure, and the expressive techniques lead into psychoanalysis. If the psychotherapist is competent to conduct psychoanalysis as well as the shorter expressive therapies with limited aim, he will have so handled the early therapy that the analytic techniques are a logical continuation of his early therapeutic work. If he is not so trained, he should at this point refer the patient to a suitable analyst.

Freudian psychoanalysis—and psychoanalysis actually implies "Freudian"—is a major, time consuming, and therefore expensive, type of psychotherapy. It is by no means a panacea, and its most competent practitioners would readily concede that as a method of therapy it has limited application in the vast field of human psychological distress. (As a dynamic psychology and as a method of investigation it is, of course, invaluable, and possesses almost unlimited applicability.) Its limitations as a method of therapy do not depend merely on such factors as its duration (twelve to eighteen months as a minimum; four to five years as a maximum), its cost to the patient, and the availability of analysts (approximately 500 in the United States, with one-fourth of these in New York City). There is also a considerable list of special indications and contraindications, as, for example:

1. The patient should be of at least bright normal intelligence on the Bellevue-Wechsler scale (115 to 120 IQ).

2. The suitable age range for adults is about 20 to 50, with certain exceptions to be made at either end of this range.

3. There must be some capacity for introspection, and some awareness of nuances of feeling in himself and in others.

4. There must be sufficient motivation in terms of initial distress and strong desire to change.

5. The patient must possess sufficient intactness of personality so that this intact portion may become allied with the analyst in the analytic work.

6. In general, patients with unalterable physical handicaps are not suitable subjects for psychoanalysis.

7. The general field for psychoanalytic therapy includes the psychoneuroses, character disorders, some of the perversions, neurotic depressions, anxiety states, and some of the psychoses. Patients in the midst of acute external turmoil should not begin psychoanalysis as such until their life situations are more stable.

With all of its limitations, however, psychoanalytic therapy is, in well trained hands, a highly effective procedure for achieving in patients a profound alteration in their neurotic personality structure and developing otherwise latent potentialities for achievement and responsible living.

The Freudian school of psychoanalysis is the main stream of the psychoanalytic movement. There have, in the past, been several split-offs

from the main stream which resulted in transient and minor developments of non-Freudian schools. The school of the late Alfred Adler took one aspect of psychoanalysis, namely, the methods of the ego in dealing with external forces, and attempted to develop it into a system called individual psychology. The central theme of this psychology was that of inferiority feelings and the drive for power. This psychology and system of therapy died out with its leader. Carl Jung, also an early pupil and associate of Freud, split with him and developed a school of "analytical psychology" which emphasized symbolism and religious beliefs and which explained mental disorders, especially those of middle life and after, in terms of regressions to a collective unconscious, or racial heritage. His school still persists but his incorporation of Nazi racial ideology into his psychological theories has caused him to be severely criticized. The late Otto Rank, also an early pupil of Freud's, developed a system of therapy which emphasized the transference and the uncovering and working through of birth anxiety in a three months' period of treatment. There were many short Rankian analyses in the 1920's, but this system is now also extinct. The late Wilhelm Stekel, a remarkably intuitive man and a prolific writer, attracted a few followers to his technique of rapid and early deep interpretations of symbolic and unconscious meanings. His influence has now become almost nil. Karen Horney, originally a Freudian with many fine contributions to the literature, has led a movement in the last decade to eliminate a number of the fundamental concepts of psychoanalysis and to focus attention on current cultural conflicts as the main source of personality disorders. She rejects the libido theory, the significance of early psychosexual development, and in general takes a stand against genetic psychology in favor of culturalism.

There are other deviations from orthodox psychoanalytic techniques which are not represented by their practitioners nor regarded by others as separate dissident schools of psychoanalysis, but which are modifications of technique to meet the therapeutic problems in patients who are too ill to coöperate in the usual analytic procedure. These modifications are used chiefly with psychotics and involve approaches by the analyst which actively cultivate a treatment relationship, communication with the sick patient being established on whatever level is possible in the individual case. The success of such attempts depends on the resourcefulness of the analyst in coping with the patient's inaccessibility and his

capacity for empathy and intuition in understanding what is communicated by the patient's verbalizations, behavior, and attitudes. Long periods of careful therapeutic work are required but the results are often very rewarding. As the patient improves the treatment may merge into a more regular psychoanalytic procedure.

A special type of analytic psychotherapy developed by Rosen, for which the designation "direct psychoanalysis" has been made, deserves some comment. Rosen has reported a striking series of recoveries of severe and chronic schizophrenias. His method consists of repeated, prolonged sessions with the patient in which deep interpretative activity is carried out fearlessly and relentlessly. Interpretations are based on psychoanalytic theory, and sometimes on insights provided by other schizophrenics. The usual cautions and tentative approaches which have characterized others' work with psychotics are abandoned, and direct, deep interpretations are made promptly when the therapist believes he understands. The therapist also, when necessary to make contact, takes the roles of powerful figures in the patient's delusions and shouts denials, reassurances, and interpretations. Remarkable results are reported, and this work is now undergoing study under research conditions. It promises much but is at present difficult to evaluate.

The school of Adolf Meyer, identified as psychobiology, emphasized the sound concept of all-embracing study of man in his totality. He developed a new system of nomenclature which did not achieve significant acceptance, and termed his treatment "distributive analysis and synthesis." This psychotherapy aimed at exhaustive collecting of data regarding the patient's life, past and present, utilized diagrams to depict life influences, and assigned to the therapist the role of educator and explainer of the experiences and reactions in the patient's life. This procedure may be criticized as being far too theoretical and intellectual to influence many patients, and as having almost totally ignored the elements of transference and counter-transference in the relationship between therapist and patient. As a school of psychotherapy, it probably has a diminishing number of adherents.

All of the major psychotherapies—i.e., those which aim at significant alterations in personality structure rather than at symptomatic relief—have encountered the phenomenon discovered by Freud and termed by him "resistance." This refers to those partly conscious and partly unconscious tendencies in patients to resist self-knowledge and change,

as manifested in their inability to remember the past or to capture for therapeutic use the current unconscious content. Resistance produces a marked slowing down of progress, often approaching stalemate, while symptoms continue unaltered. Technical problems of resistance are among the most difficult to solve, and the long duration of major psychotherapy is attributable chiefly to this phenomenon.

In order to shorten the duration of therapy many attempts have been made to circumvent resistance. Chief among these techniques have been the use of hypnosis and certain sedative drugs. Under hypnosis or narcosis (also mild elation or light anesthesia) some patients are able to gain access to and to verbalize with affect otherwise unconscious memories, and to profit from the ventilation and abreaction and the interpretations of the therapist associated with this therapeutic experience. During World War II there was widespread use of intravenous sodium amytal and sodium pentothal as well as of hypnosis to produce dissolution of the resistance barriers against recalling overwhelming traumatic experiences. There often resulted clear recall and reliving of the traumatic experiences, with associated assimilation of the overstressful event and great diminution or relief of the symptoms. It was found that early treatment was essential, delay resulting in the building of stronger barriers against recall and fixing of the symptomatology, to which was then added the exploitation of secondary gains. These psychotherapeutic procedures had enormous significance in military psychiatry, but as sole treatment attempts, have proved to be disappointing in civilian psychiatry except with early traumatic neuroses in civil life. Such techniques of reducing resistance through hypnosis or narcosis do not constitute separate systems of psychotherapy, so that it is incorrect to speak of narcoanalysis, narcosynthesis, hypnotherapy, and hypnoanalysis as psychotherapies. They are adjuvant techniques to be used as a preliminary step in overcoming an initial impasse, or as devices to be introduced during psychotherapy when strong resistance blocks further progress.

The attempts to shorten the duration of psychotherapy have led to other techniques which make use of psychoanalytic principles but which try to achieve faster results especially through manipulation of the transference, role-taking by the therapist in order to provide a corrective emotional experience, and interruptions of treatment to avoid a difficult dependent transference. Alexander, French and others who report this work maintain that their therapy is entitled to be called psychoanalysis—

psychoanalysis with more flexible utilization of techniques. Many critics insist that the techniques as reported represent abandonment of fundamental analytic principles and that the goals of such therapy have become relief of symptoms and conventional social adaptation instead of the goals of structural personality alterations of psychoanalysis. Many other studies of short psychotherapy using psychoanalytic principles have been reported in the literature, and it seems well established that the whole field of psychotherapy has been greatly enriched by contributions from psychoanalysis.

In the last analysis there is only one psychotherapy, with many techniques. This one psychotherapy must rest on a basic science of dynamic psychology, and those techniques should be used which are clinically indicated for each individual patient—certain appropriate techniques for the initial stages and others later as the continuous clinical evaluation proceeds pari passu with therapy, and the goals and potentialities for the patient become more clearly delineated through his responses to therapy. And, finally, it is important to recognize that techniques as such are hardly separable from the individual who uses them. Psychotherapy is an enormously complex intercommunication and emotional interaction between two individuals, one of whom seeks help from the other. What is done and said by the one who tries to give help is inevitably his personal version of technique. Beyond all knowledge of dynamic psychology and training in techniques is his own individual personality, with its inevitable variables as to sex, physical appearance, depth of understanding, ability to communicate ideas, tone of voice, set of values, and all of the other highly individual elements which differentiate one therapist from another. The utmost impersonality and analytic incognito cannot exclude the effect of such individual elements. Hence we may say that in addition to a critique of psychotherapy one must also make a critique of the psychotherapist.

SAFEGUARDS IN THE USE OF NEW DRUGS*

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DURING THE last five decades the life span of man has been increased from 49 years to 67 years. In other words, in half a century man's life has been increased almost 37 per cent.

There are several reasons for the lengthening of the life span. Most of them are well known to all who are interested in the preservation of health and the treatment of illness, as they include such familiar topics as improved medical education, improved hospital facilities, improved sanitation, education of the general population to beneficial health practices, widening of the surgical horizon, development of physical medicine, and more effective drug measures. The latter phase, of course, is among the best known as it has offered truly remarkable life-saving techniques and, as a result, has fired the imagination of everyone. "Miracle drugs" are the order of the day. Surgery and rehabilitation, for example, also have inspired new hope for the medical profession and countless suffering patients, but many of the latter remember only the "sulfa" drugs and penicillin, and ask almost daily, "What's the latest cure?"

Obviously, perplexing problems arise as stories of the newer agents are circulated. At the same time many questions are raised: Is the new drug only ready for experimental use in humans, or is it suited to general use? Does it have harmful possibilities? Will it replace or merely supplement other treatments? Will it be of lasting importance? And, inevitably, can it be used for self-medication?

Such questions often cannot be answered completely for a long time after the drug has been introduced into use. However, it is customary today, in fact, obligatory, to collect more revealing data than were sought and reported a few decades ago. Not only is there a keener

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appreciation of the need for such data by the manufacturer, as well as the researcher and prescriber, but there is a law that exerts considerable regulation over new drugs introduced into interstate commerce. Other factors likewise exert influence over the use of drugs so that the accumulation of scientific data that now appears in published literature is sometimes almost overwhelming. Unfortunately, not all of the published reports are entirely dependable: Errors in work may be reported; erroneous interpretations may be drawn; and enthusiasm or wishful thinking may creep into the conclusions.

Thus, there is need for constant screening of scientific findings to weed out the undesirable, catalogue the desirable, question the doubtful, and sort for intelligent use that which is immediately applicable. Several agencies and scientific bodies undertake these responsibilities and serve as "medical watchdogs," their work providing a protective bulwark against, among other things, charlatanism and pseudo-science, and, at the same time, encouraging sound research and rational therapeutics.

Among the well-known agencies with legal backing is the Food and Drug Administration, popularly known as the F.D.A. This agency has its headquarters in Washington and offices throughout the country; about 1,000 individuals, professionally trained and others, make up its personnel. Its influence on therapeutics is seldom realized by those in practice unless they are doing research with new drugs. But this influence is important; in fact, amazingly important when one considers that the Federal Food, Drug and Cosmetic Act became effective only in October, 1940. Covering foods, drugs, cosmetics, and devices, the Act has implemented many changes in drug industry practices, in health standards, and in providing protection for the public. It also affects the drugs prescribed by physicians, a fact that cannot be ignored, although it is often overlooked.

Briefly epitomized, the Act demands the testing of all new drugs before they are placed in interstate commerce to determine their safety when used as directed; that all labeling be truthful and properly informative; and that the drugs be manufactured so that they are satisfactorily pure and subjected to adequate controls during manufacturing processes. This has resulted in at least proving the safety of drugs, when used as directed, before they are marketed. Indirectly, it also has served as a tremendous stimulus to the development of data to substantiate proposed advertising claims. It is obvious, however, that there are still innumerable

claims offered for many products that require further proof before they can be accepted generally. This is due, in part, to the limitations of the Act, which was passed by Congress to make self-medication safe, not to instruct physicians in the use of drugs. Nevertheless, the wording of the provisions of the Act and some Court decisions are sufficiently broad to permit the exercise of considerable influence by the Administration also on promotional material and labeling directed to the medical profession; drug manufacturers, if no one else, will attest to this.

There are some criticisms directed against any efforts of the Food and Drug Administration to permit the marketing of only therapeutically useful products, an objective with which many may sympathize, but which is regarded as a dangerous precedent by others. Most of the sincere critics claim that such rulings or decisions from the Administration, in effect, are equivalent to attempts to regulate the practice of medicine. These critics admit that fraudulent preparations should be removed without any hesitancy, but they stoutly deny that the Federal Act permits any governmental agency to force manufacturers or pharmacists, for example, to place on labels warnings such as the one required for thiouracil, or, in effect, to prohibit the sale of certain glandular substances that the Administration recently has claimed to be inert and therefore open to suspicion. The critics claim that the physician should have the sole right to decide what he is to administer, even giving, if he wishes, what may amount therapeutically only to placebos.

Where these differences of opinion may end is uncertain at the moment. Undoubtedly, however, the major questions that are involved are far from settled. There is much to be said for those who argue that prescription items are essentially the responsibility of the medical profession, but it cannot be overlooked that the Food and Drug Administration, nevertheless, has been determining what *is* a prescription item and what is an "over-the-counter" product. On the other hand, there is also much to be said for efforts that are intended to provide the optimum of protection for those who have a legitimate interest in drugs.

At least one other point concerning prescriptions should be emphasized in this discussion on safeguards in the use of new drugs. Until the Federal Food, Drug and Cosmetic Act became effective most drugs in interstate commerce, for all practical purposes, could be purchased freely without prescriptions and without violation of a law—except, of course, narcotics. With the enforcement of the Act, many drugs were

listed for prescription use only, and no patient could honestly secure such a drug without a prescription. This caused, and still causes, considerable confusion for the patient who blithely asks for whatever he wants, and for the physician who tells his patient to get "so-and-so" at the pharmacy but neglects to write a prescription for the order. Considerable embarrassment has arisen over this problem. For those who are in doubt as to whether a product is restricted to prescription use, a call directed to a pharmacy will elicit information concerning the legal status of a drug. Furthermore, if there appears on a drug label a statement to the effect that the drug can be dispensed only on the prescription of a physician or dentist, the remedy cannot be released by the pharmacist without the necessary order; to do otherwise makes him liable for prosecution.

It is interesting and important for physicians who do their own dispensing to recognize that they too are required by law to observe the provisions of the Federal Act just as are pharmacists when they fill prescription orders. Thus, the dispensing physician must observe in detail regulations concerning adequate directions for use, warnings, and other pertinent information.

And finally, so far as the Federal Food, Drug and Cosmetic Act is concerned, drugs that are available solely for investigational use can be obtained only upon filling out special forms supplied presumably only to qualified investigators. Thus, theoretically at least, drugs still in the stage of experimental investigation and not yet available in commerce can be used only for research purposes. Unfortunately, when stories appear concerning some new treatment for a serious disease, pleas from patients may force premature use of the treatment, which could have disastrous results if a toxic drug were placed in inexperienced hands. This regulatory safeguard for new drugs is intended to ensure the collection of adequate data before a new drug is placed in interstate commerce, and to prevent its misuse.

In addition to the Federal law just discussed, there are a number of state laws of somewhat similar pattern that place restrictions on the unwise use of drugs. Familiarity with such laws must be gained by physicians according to the states in which they are located. A few communities also are well-known for their regulatory protective activities, New York City being an outstanding example.

The National Institute of Health (N.I.H.) is another agency that

plays a part in the control of therapeutic agents by operating under a Federal Act which permits it to assume a supervisory role over biologic and arsphenamine preparations. Such drugs normally do not come within the activities of the Food and Drug Administration, although there are times when both organizations exercise a mutual interest. A biologic preparation such as a vaccine or toxoid must come from a producer that holds a license issued only after his place of manufacture has been inspected. The license is renewed each year. Like other drug manufacturers, the biologic manufacturer is subject to periodic plant inspections and his product may be examined at any time on the open market.

The Federal Trade Commission (F.T.C.) does not influence directly the physician's prescribing habits. This agency is concerned primarily with products sold to the public, although obviously there are some preparations that may be promoted to the public and also to the medical profession, for example, mineral oil. This agency is not concerned with labeling—which comes within the purview of the Food and Drug Administration—but with what is known as collateral advertising and which includes advertisements appearing in books, newspapers, over the radio, and in other media. It initiates action by its staff which scrutinizes advertising material and through complaints submitted by various interested parties. Some idea of its work can be gained from a study of its continuing survey of radio and periodical advertising to detect advertisements that may be false or misleading. During 1947 there were examined 412,950 newspaper and other periodical advertisements and 641,402 radio commercial continuities, of which 55.8 per cent pertained to drugs, 16.9 per cent to cosmetics, and 5.9 per cent to food.

So far this discussion has been confined to regulatory bodies that have the backing of the Courts for enforcement of the Acts under which they operate. There are, however, several agencies that have no legal support as we normally view it and yet which exert considerable influence, directly or indirectly, on health practices. One such agency is the community Better Business Bureau which consists of civic-minded and business-wise individuals who undertake a self-policing task, among other things, to assure truthful advertising for the community and to draw attention to harmful health practices and charlatans. Obviously, the Bureau has no close relation to the promotion of the so-called ethical drugs or to the activities of those who honestly attempt to follow their chosen professional careers; but, on the other hand, it does serve as a

useful ally to the physician by offering another shield of protection for the medically untrained individual who persists in looking for miracle cures.

The other agencies that now may be discussed are part of the American Medical Association and are included in a unit of the Association known as the Division of Therapy and Research, a unit which requires approximately sixty professionally trained and other individuals at headquarters office to expedite its work and otherwise to serve the medical profession. Included in the Division are the Council on Pharmacy and Chemistry, Council on Foods and Nutrition, Council on Physical Medicine, Bureau of Investigation, Laboratory, and the recently formed Joint Committee on Cosmetics. The latter office is so new, in fact, that the Committee held its first meeting on October 12, 1948. Another committee that is now in the process of organization, and hence, details are lacking at this time, is one that will be concerned with toxicologic problems facing the medical profession and the general population. One of the problems that the committee will explore early is related to the use of pesticides which has created serious hazards that are causing much concern to the Councils on Pharmacy and Chemistry and Foods and Nutrition, and to other agencies.

This audience needs no introduction to the work of the aforementioned A.M.A. agencies. However, in view of the intended purpose of this paper, i.e., a discussion of the safeguards in the use of new drugs, a few words concerning each office are not inappropriate as they will serve, like the preceding comments, to introduce the final part of this discussion which will relate solely to the use of new drugs.

The Council on Pharmacy and Chemistry was organized in 1905 as a standing committee of the Board of Trustees of the American Medical Association. Operating under seven basic rules, it evaluates new drugs and reevaluates the older remedies, making available its findings in published reports in The Journal of the American Medical Association, in New and Nonofficial Remedies, and in several other books such as Glandular Physiology and Therapy, Useful Drugs, and the Epitome of the United States Pharmacopeia and National Formulary. In addition, the Council answers thousands of inquiries each year, makes available exhibits for medical and health meetings and, of considerable importance to research workers, makes available modest grants-in-aid through its Committee on Therapeutic Research, and stimulates research

through its Therapeutic Trials Committee. The interest of the latter committee in the study of the effect of endocrines on cancer has been reported in The Journal of the American Medical Association and is well known; it needs no detailed explanation at this time. Through advice to those responsible for the acceptance of advertisements in A.M.A. publications and other journals that follow Council policies, such as most state medical journals, and because many purchasing departments in hospitals and other organizations are influenced by "Council acceptance" in the purchase of their supplies, there is considerable stimulation to drug manufacturers to prove their claims and the safety of their products if they contemplate seeking the Council seal.

The other Councils follow a somewhat similar but more restricted pattern in scope of activities, but the rules under which they operate in their acceptance programs are essentially the same. The Joint Committee on Cosmetics has been established because of the many problems associated with the use of cosmetics and it already has compiled an impressive amount of data. Except to again point out that all of the Councils and Committees welcome inquiries, these bodies now can be dismissed to permit passing to the actual development and use of new drugs. No attempt can be made to be comprehensive, but there are certain phases that are the source of continuous interest and study and therefore merit special attention.

The rapidity with which chemotherapy has advanced in the past ten years has been faster, probably, than the mind often has been able to grasp. Unless careful thought is given to the specific developments, the newer ideas are regarded sometimes in the same light as the older and less effective remedies. In addition, the enthusiasm observed in the first wave of encouragement for a new drug may be so extensive that prescribers are led to believe that the drug has no limitations. Thus, practically overnight the sulfonamides and antibiotics were introduced into medical practice and accepted so promptly that their limitations were sometimes overlooked by their less critical users. On the other hand, these agents sometimes were not used to their fullest extent because of lack of knowledge or even indifference to the facts that were available. While such drugs have saved countless lives, they can be most effective only when used properly.

There are, however, many drugs that are not as harmless as the sulfonamides and antibiotics—and certainly no one can claim that these

drugs are without harmful possibilities in view of the incidence of reactions that follow their use. But there are other drugs that produce even more striking side-effects. And, of course, there also are those drugs that are known to be inherently toxic in the majority of individuals and whose toxicity is not related to individual sensitivity, but which are used, nevertheless, because their beneficial possibilities outweigh their harmful possibilities. Today, the variety of therapeutic agents subject to the command of the physician are so varied as to be truly amazing when they are compared to the remedies of a few decades ago, but at the same time their use presents new problems.

In view of recent developments in chemotherapy—and here the word chemotherapy is not used in the restricted sense as was done by Ehrlich, i.e., the use of drugs to combat an invader, but in the more general and popular vein to embrace pure substances prepared for specific attack against disease—it is not surprising to find considerable confusion when a new drug makes its appearance on the market. Even the most conservative promotional material bears an air of optimism that is misleading unless the statements are critically examined. Even then, the opinions of the experts often must be sought to bring some semblance of orderly thinking and prescribing. And when an agent is proposed for a disease such as cancer, hypertension, virus infections, or some other equally disturbing malady, the pressure from patients and relatives to use the new "cure" provides an additional complication.

It becomes necessary, then, for the physician sometimes to go beyond the safeguards set forth for new drugs by the agencies described earlier in this paper; he can obtain information at any time from offices such as the Council on Pharmacy and Chemistry, but often he will find it expedient to ask certain searching questions to determine to his own satisfaction if the new product is all that it is claimed to be. For example, he will be more content if he knows that dependable studies on biochemistry, pharmaco-dynamics, functional pathology, acute and chronic toxicity and adequate clinical trials are available. Then he may care to ask:

For what conditions is the drug effective?

How effective is it in these conditions?

Is it superior to other drugs and methods of treatment?

What is its inherent toxicity?

Does the toxicity outweigh the therapeutic advantages, keeping in

mind the seriousness of the conditions for which it is being offered?

If there are other drugs equally or more effective in the same conditions, does the new drug offer any advantage?

Are its applications limited? If so, how?

How can its usefulness be properly controlled?

The changing trends in therapeutics make it even more important for the physician to be constantly on the alert for new drugs and new ideas. No sooner has he learned to use a drug than another is offered to take its place. Only a few years ago, for example, Dakin's solution, iodine, mercurials, and dyes were the popular agents for the prevention and treatment of infections. Today, the sulfonamides, penicillin, streptomycin, and other antibiotics are the drugs most commonly used for infectious processes. Locally applied agents now include anionic and cationic detergents. A few years ago quinine was about the only remedy for malaria, but today it is being supplanted by other more effective and less distressing substances. A few years ago, morphine and codeine were the only potent analgetics, but today the situation is entirely different. Antihistaminics were practically unheard of a few years ago, but now they are appearing almost faster than they can be catalogued.

Such a list of agents could be lengthened by the addition of vitamins, hormones, anesthetics, anti-convulsants, diagnostics, lipotropics, amino acids, blood derivatives, detoxicants, scabicides, and vaccines, but they would only serve to emphasize what is generally familiar, namely, therapeutics is not static. Furthermore, some of the more widely accepted concepts become less popular as experience and knowledge are gained. For example, sulfathiazole and sulfapyridine are no longer in New and Non-official Remedies because of their high incidence of reactions; the topical use of sulfonamides has been condemned repeatedly because the incident toxic reactions far outweigh any beneficial results; the combined typhoid-paratyphoid vaccine has been omitted from New and Non-official Remedies because of the toxic reactions from the paratyphoid fraction; pentnucleotide has been replaced by penicillin in the treatment of agranulocytosis; thyroxin has been omitted from N.N.R.; and propylthiouracil has replaced thiouracil. Other examples could be cited but they obviously are not necessary.

As the newer drugs are developed, and as their potency is increased, it may be necessary to regulate dosage by every means available includ-

ing the determination of the drug in blood levels, urinary excretions, salivary excretions, and by other means. These laboratory procedures are often important if reactions are to be kept to a minimum and therapeutic response to a maximum.

It is impossible to include in one paper all of the phases attendant to the proper use of drugs. No one can deny, however, that many accidents have occurred because drugs were not properly tested or their actions thoroughly understood before they were used. Safeguards intended to prevent such reactions have been devised with governmental backing and from voluntary sources, but the final safeguards lie with the physician who uses a new remedy. It is up to him to exercise individual judgment, based on a careful study of the available data, when a patient is undergoing treatment. Failure to do otherwise may, in fact, is inevitably certain to, provoke unfortunate consequences.

MEDICINE UNDER HITLER*

GEORGE ROSEN

THE historian of recent German medicine who approaches his subject under the impression that he is dealing with a radically new and unique phenomenon soon finds it difficult to draw any sharp line distinguishing the influence of National Socialism from deep-seated tendencies in the broader tradition of German culture. Broad strata of the population, including a considerable sector of the intellectuals, were emotionally predisposed to the kind of system Hitler offered. The acceptance and exaltation of the Third Reich by the medical profession cannot be fully appreciated without an awareness of psychological factors and sociological trends that conditioned this group.

Essentially a section of the middle classes, the medical profession experienced the same social and economic changes that affected other middle class groups. At the beginning of the twentieth century there was still a well-defined social order in Germany. Vocational groups were clearly differentiated by their status in society. Academic training was highly regarded and carried with it considerable social prestige. The natural sciences were likewise highly esteemed. In this social order the physician as a university graduate, a representative of a liberal profession, and as a natural scientist, held a secure position. During the past forty years, however, society has been subjected to a profound transformation that still continues. War and revolution came and went. Government entered more and more into the sphere of individual action. Natural science no longer enjoyed the unquestioning adulation which had formerly been its due. Currents of thought and action that were regarded as forever banished rose from the depths and began to unfold their baneful energies. Naturally, the medical profession could not remain unaffected by these changes.

Germany in the decade following World War I exhibited most clearly and most acutely the general lack of direction characteristic of modern Western society. Widening opportunity for social advancement

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through education was accompanied by the negative phenomenon of the intellectual déclassé. Increasing bureaucratization and integration of professional activity generated resentment and a nostalgic yearning for the good old days of individualism. These dissatisfactions expressed themselves in mystical philosophies of politics and science. In a world of industrialism and capitalism, dreams of German greatness, heroic leaders and a revival of an idealized Reich provided a hope of escape for those who rejected more realistic solutions of their problems. The philosophical materialism that had dominated scientific medicine was deprecated and replaced by the romantic and mystical ideologies of Neo-Hippocratism, Neo-Paracelsism and Neo-Vitalism. This wave of mysticism which engulfed Germany prepared the way for Hitlerism and its absurd dogmas. It was a social situation that demanded charismatic leadership.

Upon Hitler's accession to power, steps were undertaken to coordinate and to subordinate medicine in all its aspects to the larger purposes of the National Socialist state. Medicine became an instrument of fascist domestic and foreign policy. The official position was expressed by Reiter, President of the Reich Health Office, in the statement: "The physician fights as a biological soldier for the health of his people."

To assure a medical service obedient to the state, the medical profession was reorganized in conformity with the leadership principle and the concept of the Aryan race, those two ideological cornerstones of the Third Reich. Under the Weimar Republic the interests of the profession were represented by the Aerztekammern, chambers of physicians chosen by all qualified practitioners of a regime, which supervised the conduct of their members. The economic interests of insurance doctors were represented by two great associations, the *Hartmannbund* and the *Aerztevereinsbund*. Following the seizure of power, all the former medical chambers were dissolved and replaced by a new hierarchy, headed by the *Reichsärzteführer*, the physicians' leader appointed by Hitler. The *Reichsärzteführer* represented the peak of a hierarchical pyramid with the absolute right to appoint and dismiss his immediate subordinates, and each of these in turn had similar rights until the base of the pyramid was reached. The Leader of the physicians was the head of the *Reichsärztekammer* (Reich Chamber of Physicians), the state medical organization which had jurisdiction over

the licensing of physicians to practice and therewith controlled professional activity. Its decrees were enforced by the *Deutscher Aerztegerichtshof* (German Court for Physicians) operating at the district level. Physicians already engaged in insurance practice or wishing to enter such practice were kept in line by the *Kassenaerztliche Vereinigung Deutschlands* (Association of Sickness Insurance Doctors of Germany). This organization regulated admission to insurance practice and administered decrees which applied to insurance practitioners.

Every phase of a physician's professional activity was minutely regulated, and it was expected that the physician would accept and further the principles of National Socialism. Recalcitrance carried economic penalties such as loss of official position and license to practice. Behind these loomed the jail and the concentration camp.

Further to assure that the primary obligation of the medical profession would be to the State, medical training provided indoctrination in party dogma. Prior to 1933 medical education had been of high caliber, but thereafter the medical curriculum was thoroughly standardized and Nazified. Two courses, one on racial hygiene, the other on human heredity, were introduced into the curriculum of every medical faculty. In addition, all other medical courses were supposed to stress the superiority of Nordic man, and to be aimed at the definite objective of creating good Nazi leaders.

In a like spirit medical research was directed toward the justification of National Socialist racial doctrine. Before the advent of Hitlerism, Germany's many research institutes enjoyed world-wide renown. In 1933, most of these institutes, especially those engaged in research on subjects having a social aspect, such as hygiene and psychiatry, were coördinated with Nazi political purposes, Nazi personnel was added, and politically suspect scientists were removed from their posts. In general, institutes and faculties concerned with any aspect of social hygiene, or with the medical phases of geopolitics, were under National Socialist leadership and influence.

In the field of public health, services which existed before 1933 were similarly subverted to National Socialist policy by drastic coördination of administration and function. This administrative reorganization was accomplished by a significant shift in emphasis. Under the Weimar Republic, the preventive aspects of public health work were stressed, but under Hitler the protection of the racial inheritance be-

came the primary objective. The *Gesundheitsamt* (the local Public Health Office) became the pivot of the racist program. In addition to the usual tasks of public health, the local Health Office undertook to compile, in association with the police, a complete medical record for each individual in the district. These records were intended to provide a basis for carrying out the laws promoting hereditary health. In carrying out these functions the health office coöperated with the appropriate agencies of the Party and of the S.S., of which it was a kind of health police arm.

In certain fields the German public health authorities were quite active. After having become convinced of the efficacy of diphtheria immunization as a preventive measure, large scale campaigns were organized in various parts of the country to immunize as many children as possible.

As part of the general policy of increasing the population, efforts were made to reduce infant mortality. These efforts were attended by some degree of success.

The National Socialists could not afford wholly to ignore the deep-rooted traditions clustered around the insurance funds. At first they contented themselves by coördinating these through over-all agencies of government control. After coördinating the regulative and judicial controls, the Nazis began to shift and to narrow the functions of the social insurance system. Under the Weimar Republic, the various branches of social insurance had developed their own health services and gradually expanded them beyond the cure and relief of sickness to the prevention of disease and the positive promotion of health. The National Socialist regime opposed this development and in part reversed it. Out-patient clinics under the auspices of the Krankenkassen, which had provided excellent remedial as well as preventive care, were closed. Elaborate rules and regulations concerning economical treatment, medication, prescription of special services, and indications for hospitalization were established, limiting the benefits to the insured and the scope of medical practice. As a result, the importance of the medical service provided through the insurance system was gradually but consistently diminished.

Soon after coming to power the proponents of National Socialism saw to it that legislative affirmation was given to their theories of race and population. Marriage was permitted only after thorough medical

and eugenic examination. Even more significant were measures intended to prevent the propagation of the physically and biologically unfit. This involved the castration of habitual criminals and the sterilization of hereditary defectives. Finally, the prohibition of sexual relations between Aryans and non-Aryans added the capstone to the structure defending the purity of German blood.

Having safeguarded its quality, the National Socialists turned their attention to increasing the quantity of the sacred seed. An energetic program for raising the birth rate was put into effect, while those considered a burden to the state were killed by medical means. The logical consequence of this point of view was, of course, the development of the extermination camps, especially during the war years.

Finally, necessarily brief reference must be made to the perversion of German medicine under the Nazis aegis by the incorporation of nature-healing, herb-cures, and various other forms of charlatanism. The scientific obscurantism of the National Socialists, concisely expressed in their doctrine of *Blut und Boden* tended to rally the Nature Healers to the banner of Hitlerism. In 1939, the Nature Healers were granted recognition and given the privilege of calling themselves "Physicians."

Upon the perverted structure of German medicine were superimposed the health and medical services of the National Socialist Party. These were designed to further racial and other political policies and to reward faithful Party members and followers. In most instances the Party organization antedated and shaped the policies of the State organization. Where Party and State organizations existed side by side, the Party organization exercised the predominant influence.

It is clear that the political philosophy of a nation exerts a great influence on its science. Medicine as a rational field of human endeavor cannot flourish when the dominant philosophy is mystical and antirational as under Fascism. How could medicine advance when the direction of studies, the allocation of resources, the judgment of results, and the promotion of merit depended on charlatans like Conti, and the crack-brained fanatics of the S.S.? What saved German medicine from complete collapse was the program of imperialist expansion. Modern war is highly scientific and technical, and involves all the resources of medical science. The need of preparing for total war in some degree kept German medicine earthbound, and prevented it from losing itself completely in mystical speculations.

RECENT ACCESSIONS TO THE LIBRARY

("Possession does not imply approval.")

Ewen, J. H. Mental health; a practical guide to disorders of the mind. London, Arnold, [1947], 270 p.

Fairbrother, R. W. A text-book of bacteriology. 5.ed. London, Heinemann, 1948, 480 p.

Filler, (Mrs.) J. (Parker). The female hormones. N. Y., Booktab Press, [1947], 184 p.

Fishbein, M. Medical writing. 2.ed. Phil., Blakiston, [1948], 292 p.

Franco, E. Tratado das doenças do estômago. Lisboa, União Gráfica, 1947, 2 v.

Freilich, E. B. & Coe, G. C. Manual of physical diagnosis. [3.ed.] Chic., Year Book Publishers, [1947], 351 p.

Frohman, B. S. Brief psychotherapy. Phil., Lea, 1948, 265 p.

Froment, R. Etude clinique des maladies du coeur. [2.éd.]. Lyon, Librairie Scientifique & Médicale, [1946], 334 p.

Gale, E. F. The chemical activities of bacteria. London, Univ. Tutorial Press, [1947], 199 p.

Gibbens, J. H. The care of children from one to five. 3.ed. London, Churchill, 1947, 192 p.

Gibberd, G. F. A short textbook of midwifery. 4.ed. London, Churchill, 1947, 563 p.

Goar, E. L. Handbook of ophthalmology. St. Louis, Mosby, 1948, 166 p.

Goodnow, M. Nursing history. 8.ed. Phil., Saunders, 1948, 404 p.

Granit, R. A. Sensory mechanisms of the retina. London, Oxford Univ. Press, 1947, 412 p.

Grégoire, R. & Oberlin, S. Précis d'anatomie. [2.éd.], v. 2-3, texte & atlas; [3.éd.], v. 1, texte & atlas. Paris, Baillière, 1947-1948, 6 v.

Gross, L. Ludzkosc w walce o zdrowie. [Mankind in the fight for health.] 3.wyd. Warszawa, Trzaska, [1948?], 379 p.

Gross, L. Siewcy chorób i smierci. Warszawa, Trzaska, [1948?], 333 p.

Havermans, F. M. Beknopte psychiatrie voor sociaal-werkenden. 3.druk. Roermond-Maaseik, Romen, 1948, 173 p.

Hayt, E. & Hayt, (Mrs.) L. R. Law of hospital, physician and patient. N. Y., Hospital Textbook Co., 1947, 647 p.

Hearing and deafness; a guide for laymen, edited by H. Davis. N. Y., Murray Hill Books, [1947], 496 p.

Himsworth, H. P. Lectures on the liver and its diseases. Cambridge, Harvard Univ. Press, 1947, 204 p.

Hinshaw, D. Take up thy bed and walk. [Story of the Institute for the Crippled and Disabled.] N. Y., Putnam, [1948], 262 p.

Hoff, E. C. A bibliographical sourcebook of compressed air, diving and submarine medicine. Wash., [U. S. Govt. Print. Off.], 1948, 382 p.

Human, J. U. Blind intubation and the signs of anaesthesia. 3.ed. London, Lewis, 1947, 230 p.

Jamieson, E. B. Illustrations of regional anatomy. 7.ed. Edinburgh, Livingstone, 1947, [28] p. 320 col. plates.

Joly, H. Traitement chirurgical de la tuberculose pulmonaire. Paris, Vigot, 1947, 282 p.

Katz, D. Psychological atlas. N. Y., Philosophical Library, [1948], 142 p.

Lee, J. A. A synopsis of anaesthesia. Bristol, Wright, 1947, 254 p.

Lehrbuch der Augenheilkunde, hrsg. von M. Amsler, A. Brückner, A. Franceschetti [und anderen]. Basel, Karger, 1948, 858 p.

Leibovici, R. & Dreyfus, G. A. S. Les thyroïdectomisés. Paris, Doin, 1946,

109 p.

Lepointe, G. Droit médical et droit social. Paris, Montchrestien, [1946], 128 p.

Lereboullet, P.; Saint-Girons, F. & Zuber, A. Manuel de puériculture. 4.éd. Paris, Masson, 1945, 231 p.

Lévinton, J. Lo que debe saber todo alérgico. 2.ed. Buenos Aires, Editorial Apolo, [1947], 176 p.

Ludwig, E. Doctor Freud; an analysis and a warning. N. Y., Hellman, 1947, 317 p.

M. D. Anderson Hospital for Cancer Research, Houston, Texas. The manual of the M. D. Anderson Hospital for Cancer Research. [Houston], Univ. of Texas, 1945, 201 p.

McDonald, J. J.; Chusid, J. G. & Lange, J. Correlative neuroanatomy. 4.ed. Palo Alto, University Medical Publishers, [1947], 156 p.

Mallet, L. C. M. & Le Camus, H. F. E. Bombardement atomique et radioactivité artificielle; applications biologiques et médicales. Paris, Expansion Scientifique Française, [1946], 183 p.

Marcel, J. E. & Fabre, M. Gynécologie médicale. Paris, Maloine, 1947, 733 p.

Maygrier, C. & Schwaab, A. Précis d'obstétrique. 6.éd. par L. Devraigne. Paris, Doin, 1946, 1050 p.

van der Meer, P. & Zeldenrust, J. Reticulosis and reticulosarcomatosis. Leyden, Universitaire Pers Leiden, 1948, 83 p.

Meijers, F. S. Inleiding tot de sociale psychiatrie. Rotterdam, Brusse, 1947, 200 p.

Mettler, F. A. Neuroanatomy. 2.ed. St. Louis, Mosby, 1948, 536 p.

Milian, G. La syphilis occulte. 2.éd. Paris, Baillière, 1946, 181 p.

Modern hypnosis, edited by L. Kuhn and S. Russo. N. Y., Psychological Library Publishers, 1947, 349 p.

Modi, J. P. A textbook of medical jurisprudence and toxicology. 9.ed. Bombay, Tripathi, 1947, 788 p.

Mott, F. D. & Roemer, M. I. Rural health and medical care. N. Y., McGraw-Hill, 1948, 608 p.

Mouquin, M. Coeur, artères, veines, sang. 2.éd. Paris, Masson, 1947, 779 p.

Mummery, J. P. L. Nothing new under the sun. London, Melrose, [1947], 178 p.

Nordisk laerebog i kirurgi, udgivet af R. Ingebrigtsen [og andre]. 4.udg. København, Munksgaard, 1948, v. 1.

Nouveau précis de pathologie chirurgicale, [par] J. Patel [ed d'autres]. Paris, Masson, 1947, 1 v.

Olivier, E. Anatomie de la tête et du cou. 2.éd. Paris, Legrand, 1946, 2 v. in 1.

Ottonello P. Malattie del sistema nervoso. Milano, Vallardi, [1947], 638 p.

Padgett, E. C. & Stephenson, K. L. Plastic and reconstructive surgery. Springfield, Ill., Thomas, [1948], 945 p.

Paolini, V. Chimica farmaceutica e tossicologica. [3.ed.] Roma, Edizioni Italiane, [1947], 230 p.

Paucot, H. & Bédrine, H. Obstétricie pratique. [2.éd.]. Lille, Michon, 1947, 567 p.

Pessano, J. E. "Cáncer;" inducción a su diagnóstico. Buenos Aires, [Talleres Gráficos P. R. O. C. M. O.], 1947, 462 p.

Peterson, F. W. Desert pioneer doctor and Experiences in obstetrics. [Calexico, Calif.], Calexico Chronicle, 1947, 130, 85 p.

Pichler, H. & Trauner, R. Mund- und Kieferchirurgie. 3.Aufl. Wien, Urban, 1948, 3 v.

Pigeaud, H. Le forceps. Lyon, Camugli, [1947], 148 p.

Planchon, L. & Bretin, P. M. Précis de matière médicale. 5.éd . . . par P. Manceau. Paris, Maloine, 1946, 2 v.

Plesch, J. Blood pressure and its disorders. 2.ed. Balt., Williams, 1947, 307 p.

Précis de pathologie médicale. 2.éd., v. 8; 3.éd., v. 1; 5.éd., v. 7. Paris, Masson, 1947-1948, 3 v.

Public Health Institute. How laymen cut medical costs. Chic., Public Health Institute, 1948, 35 p.

Ramstad, E. Biologiske laegmidler. Oslo, Tanum, 1946, 448 p.

Rasmussen, H. Klinisk elektrokardiografi. Oslo, Tanum, 1946, 210 p.

Ratti, A. Radiologia medica. 2.ed. Milano, Casa Editrice Ambrosiana, 1945, 428 p.

Ravina, A. Maladies de l'appareil respiratoire. Maladies de l'appareil digestif. 2.éd. Paris, Masson, 1948, 800 p.

Regnault, J. E. J. Fille ou garçon? Comment avoir fille ou garçon. Paris, Médi-

cis, 1947, 343 p.

Remlinger, P. & Bailly, J. La rage. Paris, Maloine, 1947, 192 p.

Ricci, J. V. Diagnosis in gynaecology. Phil., Blakiston, [1948], 259 p.

Rümke, H. C. Studies en voordrachten over psychiatrie. 2.druk. Amsterdam, Scheltema, 1948, 499 p.

Scotti Douglas, R. La peritonite tubercolare. Napoli, Edizione Scientifiche Italiane, 1946, 334 p.

Seegers, W. H. & Sharp, E. A. Hemostatic agents. Springfield, Ill., Thomas, [1948], 131 p.

Ségard, M. Consultaire. 10.éd. Paris, Maloine, 1946, 960 p.

Sevringhaus, E. L. Endocrine therapy in general practice. [6.ed.] Chic., Year Book Publishers, [1948], 264 p.

Soula, L. C. Précis de physiologie. Paris, Masson, 1947, 1085 p.

Spencer, G. A. Medical symphony; a study of the contributions of the Negro to medical progress in New York. [N. Y., Arlain, 1947], 120 p.

Stabile, A. La esterilidad matrimonial. Buenos Aires, El Ateneo, [1947], 284 p.

Stitt, E. R.; Clough, P. W. & Branham, S. E. Practical bacteriology, hematology, and parasitology. 10.ed. Phil., Blakiston, [1948], 991 p.

Tanon, L. Hygiène. 4.éd. Paris, Maloine, 1947, 266 p.

Terapia medica attuale, diretta dal Prof. C. Gamna. Torino, Unione Tipografico-Editrice Torinese, 1947, 2 v.

van Thiel, P. H. The leptospiroses. Leiden, Universitaire Pers Leiden, 1948, 231 p.

Thoma, K. H. Oral surgery. St. Louis, Mosby, 1948, 2 v.

Torbett, J. W. The doctor's scrapbook. [Dallas, Wilkinson Printing Co., 1947], 255 p.

Touraine, A. Les traitements actuels des parasitoses animales de la peau. Paris, Baillière, 1947, 188 p.

Trinchera, C. Lezioni di anatomia chirurgica e tecnica operatoria. 2.ed. Bari, Edizioni Ermes, 1946, 471 p.

Turner, C. D. General endocrinology. Phil., Saunders, 1948, 604 p.

Vandervael, F. Notions d'analyse des mouvements du corps humain. Paris, Maloine, 1947, 139 p.

Vaughan, W. T. Practice of allergy. 2.ed. St. Louis, Mosby, 1948, 1132 p.

Verboom, C. H. Zieke zuigelingen. Assen, van Gorcum, 1948, 212 p.

Woerdeman, M. W. & Raven, C. P. Experimental embryology in the Netherlands, 1940-1945. N. Y., Elsevier, 1946, 132 p.

Wright, I. S. Vascular diseases in clinical practice. Chic., Year Book Publishers, [1948], 514 p.

Young, B. R. The skull, sinuses and mastoids; a handbook of roentgen diagnosis. Chic., Year Book Publishers, [1948], 328 p.